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PAPER TRADE JOURNAL

VOL. 124, NO. 2 JANUARY 9, 1947

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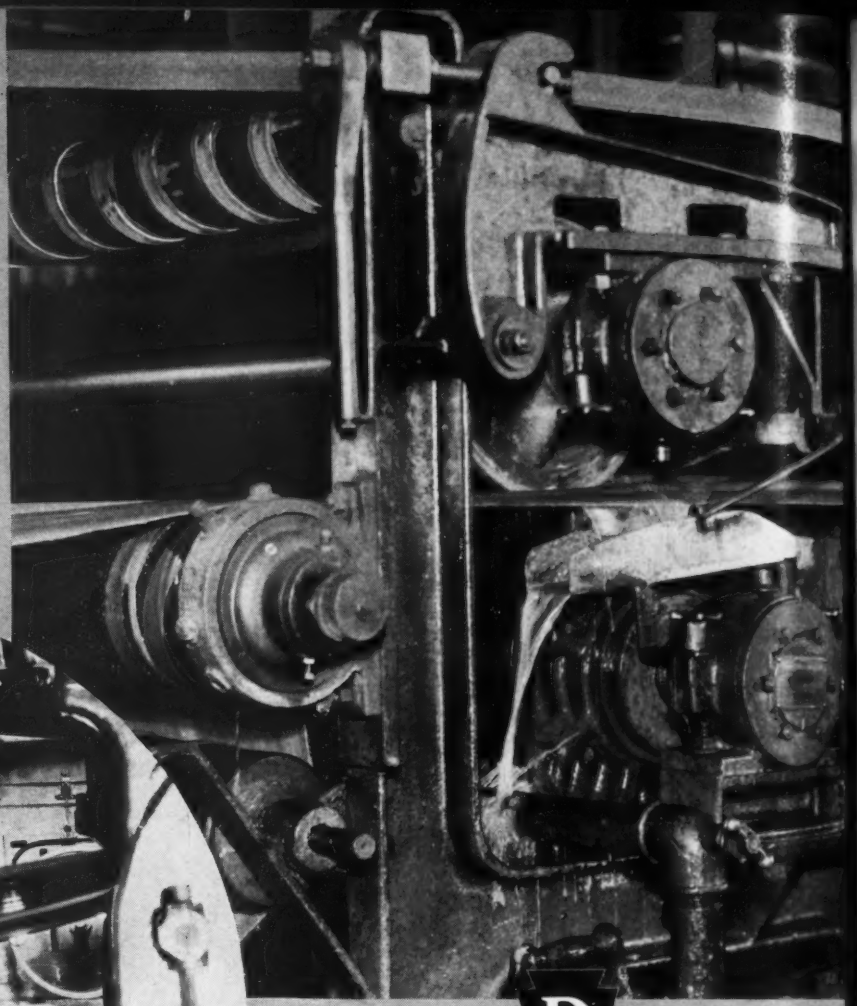
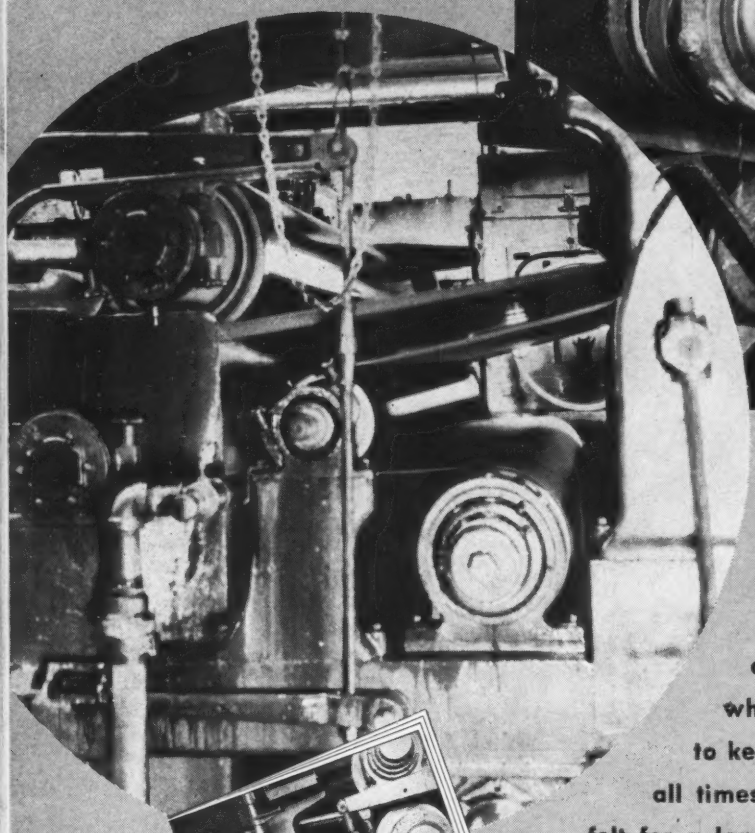
Watertown Area Finds Year's Prospect Promising
Kimberly-Clark Outlines Its Welfare Plans
Kodak Promotes Its Paper Executives
Twenty Million Tons Estimated as 1947 Production
Industry Mourns Death of Jacob Kindleberger
Perkins-Goodwin Interests Buy Ryegate Mill

Continuous Full Width Cleaning

of Press and Pick-up Felts





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PAPER TRADE JOURNAL

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CALENDAR OF COMING EVENTS

January 20, 1947 — National Association of Waste Material Dealers, Western Division, Meeting, Hotel Sherman, Chicago.

January 29-31, 1947—Canadian Pulp and Paper Association, Annual Meeting, The Mount Royal, Montreal, P. Q.

January 29, 1947—Southern Pulpwood Conservation Association, Annual Meeting, The Ansley Hotel, Atlanta, Ga.

February 23-27, 1947—The American Paper and Pulp Association, Annual Meeting, The Waldorf-Astoria, New York City.

February 24-27, 1947—Technical Association of the Pulp and Paper Industry, Annual Meeting, The Commodore, New York City.

May 22-24, 1947—American Pulp and Paper Mill Superintendents Association, Annual Convention, Edgewater Beach Hotel, Chicago.

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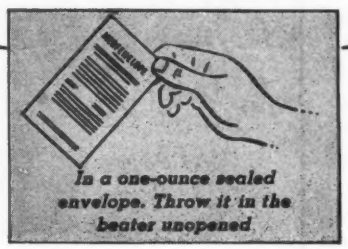

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PAPER TRADE JOURNAL

Vol. 124, No. 2 January 9, 1947

Title Reg. U. S. Pat. Off.

Kalamazoo Mourns Jacob Kindleberger

KALAMAZOO — Jacob Kindleberger, founder and for twenty years president of the Kalamazoo Vegetable Parchment Company, died January 1 in Bronson Hospital. He was 71 years old.

Born in Alsace-Lorraine, Mr. Kindleberger, after coming to this country in 1880, rose from a rag sorter in a West Carrollton, Ohio, paper mill to found one of the largest such establishments in the world. Mr. Kindleberger had been chairman of the board of the Kalamazoo Vegetable Parchment Company since 1936.

He came with his parents to America at the age of 5. At the age of ten he began work for 25 cents a day in the West Carrollton paper mill. Because of poor eyesight he was unable to attend school.

At 21 Mr. Kindleberger took a job as janitor of the local school at $20 a month—less than he was then earning at the mill—because he was permitted to attend classes. In four years he was able to enter Ohio Wesleyan University. To pay his way and help support his family, he sold paper, books, hat racks, steam cookers and other household articles. In his third year in college, however, he was forced to quit for fear of going blind.

Although he was then making $100 a week selling steam cookers, he took a job with the West Carrollton paper mill at $15 a week, because he felt this job had a future in it. For the next thirteen years as salesman for the concern he visited every important city in the United States and Canada and became one of the best-known road men in the paper industry.

Mr. Kindleberger sold Kalamazoo businessmen on the idea of establishing a mill to manufacture exceptionally fine paper and raised $50,000 capital among them to start the mill.

When success came, Mr. Kindleberger improved his machinery, enlarged his capacity and built houses about the mill for his workers to live in, thus beginning the model community of Parchment.

His widow, who was with him at the hospital when he died, his son Joseph B. Kindleberger and three grandchildren, Ruth, Martha Jo and Lucy Marie, all of Kalamazoo, survive. Services were held Saturday at the Parchment Union Methodist church.

20 Million Tons Estimated As Production Goal for 1947

Kellogg Retires from Newsprint of Canada

MONTREAL — Paul Kellogg, general manager of the Newsprint Association of Canada for the past two years, has resigned from this position. Mr. Kellogg undertook management duties only for the wartime and the immediate postwar period and intends now to devote his time to his position as president of Stevenson and Kellogg Limited, a firm of management engineers which continues to act as statistical agent for the Newsprint Association, as it has for the past ten years.

M. L. MADDEN

Chairman of the Board of Hollingsworth & Whitney Company, Boston, paper manufacturers, was honored by the Directors at a luncheon December 30 in the Parker House, Boston, upon his completion of sixty years of service with the company. Mr. Madden, who will be eighty-one next month, is active in the daily operations of the business, which he joined in January, 1887. He has served in most of the departments of the company, and became a vice-president in 1911, president in 1931, and chairman of the board in 1945. During his sixty years with the company, its daily paper production has increased from 20 to 500 tons.

WASHINGTON — The production of paper, paperboard and paper products in 1947, it is estimated by the Department of Commerce will be about five percent above the 1946 level on a tonnage basis. Dollar sales in 1947, on the other hand, are expected to be between 10 and 20 percent greater than last year, owing to an increase in volume, quality and price. Current estimates indicate that approximately 19 million tons of paper and paperboard were produced in 1946, an all time high tonnage. An increase of five percent would raise 1947 production to 20 million tons.

These and other estimates in the December pulp and paper report are based upon the assumption that optimum operating conditions will prevail. This presupposes no serious or unusual labor disturbances, transportation or raw material problems, and a general level of economic and industrial activity at least equal to that prevailing in 1946.

The 1947 outlook was prepared by the Pulp and Paper Unit of the Office of Domestic Commerce and is based primarily upon reports received from Department Field Office consultants who contacted numerous manufacturers, converters, distributors and consumers throughout the country. The December report, like past issues, is the result of cooperative efforts of the Department of Commerce and the industry.

The report indicates that consumer requirements for the products of the pulp and paper industry will continue throughout the new year at approximately the same levels which held throughout 1946. This expectation is based on the fact that consumer requirements rise and fall with the national level of economic activity. Even should a temporary and moderate recession from the 1946 over-all economic level occur this year, it probably would have only a slight curtailing effect upon pulp and paper production, the report states.

The prospects for a continued heavy demand for paper and paperboard in 1947 are based upon several considerations. First, there is a great demand to satisfy basic needs and uses which

(Continued on page 18)

Kimberly-Clark Tells Of Retirement Fund

KIMBERLY, Wis. — Ernst Mahler, executive vice-president of Kimberly-Clark Corporation, Neenah, told pensioners from the Kimberly mill in this village and the Atlas mill at Appleton at their annual get-together dinner at the clubhouse here Saturday, December 28, that $3,500,000 has been set aside for the K-C retirement fund. In 1947, he said, there will be more than 200 Kimberly-Clark former workers on pension. More than 70 men have retired at the Kimberly mill and are on pension.

Mr. Mahler read a letter from F. J. Sensenbrenner, retired chairman of the board and former president of the corporation, expressing regret that he was unable to attend the dinner. He said that Mr. Sensenbrenner, who is still active in many affairs, particularly as chairman of the University of Wisconsin Board of Regents, had had his eighty-third birthday the previous week.

A. G. Briggs, superintendent of the personnel department at Kimberly, was toastmaster and introduced the speakers. J. T. Doerfler, mill manager, who welcomed the group, said that there are 147 workers who have had 25 years or more of service with Kimberly-Clark, exclusive of the 70 now on pension.

Some of the new pensioners at the dinner could have retired early in 1945, but continued to serve during the manpower shortage. Three of the seven new members of the group who were present were introduced by Cliff Williams, Atlas mill manager. Eight retired members from Atlas were at the dinner, of whom William Kranzusch, 86, was the oldest. Fred Kranhold, formerly of the Neenah staff, now retired, also attended the dinner.

Other speakers were J. C. Semonich, director of the industrial relation department; L. A. Eisenach, director of the insurance division; and John Mullen, personnel superintendent at the Atlas mill.

A corporation-wide survey of safety activities was featured in the November-December issue of Cooperation, a Kimberly-Clark publication. It was captioned "Of First Concern," a phrase from a recent speech by Cola G. Parker, corporation president, which he applied to safety. Pictures and text tell the story of safety records and programs in the first nine pages of the magazine.

Other features are pictures of two corporation additions, the new half-million dollar addition to the Canadian Cellucotten Products Company, Ltd., Niagara Falls, Ontario, Canada, and the new house for the world's fastest paper machine at Lakeview in Neenah.

The Niagara Falls, Canada, addition is 125 by 155 feet, four stories high, with 15,000 square feet of converting space and 60,000 square feet of storage area. The new converting floor has ceramic glazed tile walls, acoustical tile ceiling and mosaic tile floors with fluorescent lighting. A large air conditioning and air filtering plant keeps the mill at even temperature the year around. The Niagara Falls, Canada, mill covers about 40,000 square feet of ground and employs about 450 persons.

At Neenah, the wire pit has been lined and only minor work is needed to ready the Lakeview addition for the installation of the new crepe wadding machine which was expected during January, but may not arrive until early spring. A new track has been put in to meet the height of the loading platform on the north side of the new addition.

Powell River Names Quist To Development Duties

VANCOUVER, B. C.—Sven Quist has been appointed project engineer with the Powell River Company at its head office in Vancouver. Mr. Quist was formerly consulting engineer with John Stadler in Montreal.

Ronald Stewart holds a corresponding position at the Powell River plant of the company, and the two officials will be primarily engaged in engineering details in connection with the extensive construction program of the Powell River Company. Both officials will work under P. R. Sandwell, chief engineer, Vancouver, and H. Moorhead, resident engineer at Powell River.

Central Paper Names Knickerbocker

MUSKEGON, Mich.—Robert Knickerbocker, for many years chemist with the Central Paper Company, has recently been appointed Director of Control Laboratory as an initial step in reorganizing the company's technical staff. Mr. Knickerbocker will be in complete charge of the technical control of the company's processes and products, a procedure which separates the control laboratory from other research work and is designed to enhance the efficiency of control and quality of the products made by the Michigan company.

E. M. Hopkins Joins Brown Company Board

BERLIN, N. H.—Ernest M. Hopkins, retired president of Dartmouth College, has been elected to fill a vacancy on the board of directors of Brown Company, Berlin, N. H., manufacturer of paper and wood pulp products. He will also continue as one of the three trustees under the voting trust for the company's preferred and common stocks.

Dr. Hopkins also is a director of the Boston and Maine Railroad, Continental Can Company, National Life Insurance Company and New England Telephone and Telegraph Company.

Kodak Promotes Its Paper Executives

ROCHESTER, N. Y. — Promotion of seven East Kodak Company executives associated with the manufacture of photographic paper has been promulgated by Charles K. Flint, general manager of Kodak Park, the company's film- and paper-manufacturing division.

Gerould T. Lane was appointed assistant manager of Kodak Park. Formerly assistant to the plant's general manager, Lane came to Kodak in 1918 after five years with the B. D. Rising Paper Company, Housatonic, Mass., where he was assistant superintendent. He was appointed assistant superintendent of Kodak's new paper mill shortly after he joined the company and in 1929 became superintendent of the paper mills. During this period Kodak developed its photographic paper with purified spruce fiber as a base instead of rags. In 1936 Lane became assistant general superintendent of the paper division and rose to assistant to the general manager in 1939.

Donald B. Kimball, formerly superintendent of the paper mills, was designated assistant general superintendent of paper departments. Upon coming to Kodak in 1928, Kimball was made a supervisor in the paper mills, then became assistant superintendent in 1929 and superintendent in 1936.

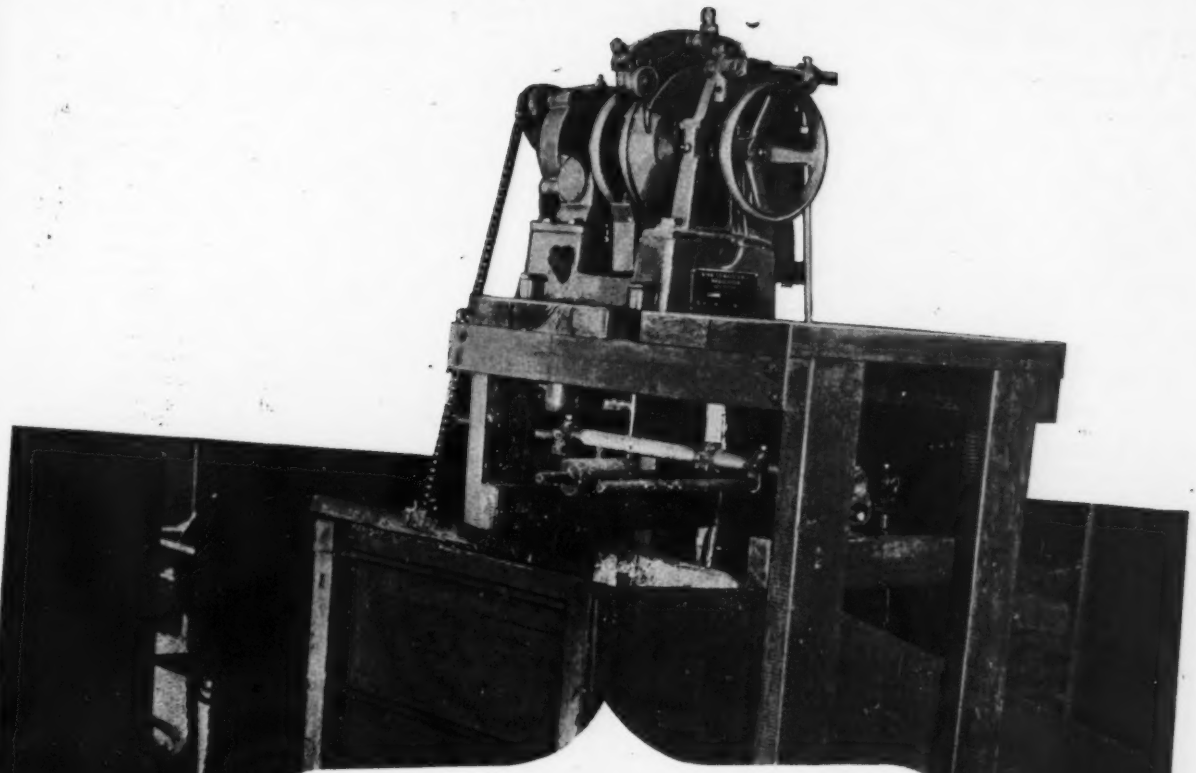
Kenneth J. Mackenzie, formerly assistant superintendent of the paper mills, was promoted to superintendent. He joined Kodak in 1927 and set up a chemical control system for paper and started the paper mill laboratory. He conducted a three-year survey to determine the needs of various departments for wrapping paper and in 1931 became a supervisor in the paper mills. He was appointed assistant superintendent in 1936.

George A. Richter, formerly assistant superintendent of the wood cellulose division, was appointed superintendent of wood cellulose development. He came to the company in 1941 from the Brown Company, Berlin, N. H., where he was director of research and development, wood cellulose products, from 1915 to 1940.

Geoffrey Broughton was appointed assistant superintendent of the paper service department, technical development section; Howard E. Smith was named assistant superintendent of the paper service department, product control section; and Ralph W. Peters became assistant superintendent of paper mills.

Butler Takes Chicago Territory

CHICAGO — J. S. Butler has been transferred from the home office of the Gummed Products Company to the Chicago district office where he will be affiliated with the sales organization here.



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Write for Bulletin illustrating and describing the many valuable applications of the Bird Consistency Regulator.

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Find Prospect Bright For Watertown Area

WATERTOWN, N. Y.—The paper industry in this area is looking forward to a successful year, according to a survey of leading producers. A spokesman for the Dexter Sulphite Pulp & Paper Company said his company had on hand orders that would extend to 1956. The firm is spending $1,000,000 to rehabilitate its plant and to increase its productive capacity. It is building a new boiler house and installing a steam-turbo power system and a new paper machine to produce glassine paper.

Though work on the new Dexter units has been suspended for the winter, the buildings are well under way and will be in use in 1947.

Roy K. Ferguson, president of the St. Regis Paper Company, said, "St. Regis anticipates a heavy demand for paper and paper products and has pushed its long range expansion program to meet the call for paper, multiwall bags and plastics."

He added that the company's expansion in 1946 "proves our faith in the overall stability of general business conditions and specifically of the paper industry."

Abe Cooper, president of Bagley & Sewall, which now employs 600 men, a peak for a non-war year, said he expected 1947 to be fully as busy as 1946. Principal work at the plant during the first part of 1947 will be the finishing up of paper machines already contracted for, he said.

Pacific Mills Names New Logging Heads

Reed P. Banford, Chilliwack, has been appointed general logging superintendent for Northern Pulpwood Limited, new Pacific Mills subsidiary, by Paul E. Cooper, president of Pacific Mills Limited.

Mr. Banford, now 36, has been actively engaged in the provincial logging industry for 19 years, both as an independent operator and in association with various logging firms. Prior to joining Pacific Mills' timber division in January 1945 he was chief timekeeper and assistant superintendent for Aero Timber Products Limited in the Queen Charlotte Islands.

The Pacific Mills president also announced the appointment of Carl Christmas as assistant logging superintendent at Ocean Falls.

Paper Group to Stage Coatings Discussion

CHICAGO—The Chicago Professional Paper Group will present, on January 20th, a panel discussion stressing the importance in preparing paper surfaces for good printing. The formal presentation of the speakers will cover board preparation, coating equipment, coatings and inks.

The speakers of the evening will be: John F. Halladay, Industrial Process Consultant, Elkhart, Ind.; W. A. Kirkpatrick, Allied Paper Mills, Kalamazoo, Mich.; Fred Weymouth, I.P.I., Division of Interchemical Corporation, Chicago.

After the formal presentation the meeting will be thrown open for questions and answers pertaining to the above phases of paper processing. The meeting will be held at the Chicago Bar Association rooms, 29 S. LaSalle Street, 6:30 p.m.

Calcasieu Bag Plant Begins Operations

ELIZABETH, La. — The paper bag plant of the Calcasieu Paper Company, Inc., has begun operations here with six converting machines. Management states that plans call for thirty such machines which are expected to be in operation by early spring when personnel, now in training, will be able to handle them. When all machines are in operation approximately 100 persons, 90 of whom will be women, will be employed. In full operation the plant is expected to manufacture 3,000,000 bags daily. Several types and sizes of bags will be made including small notion and grocery bags and larger garment bags.

Kraft paper from the Calcasieu Paper Company, which is adjacent to the bag plant, will be used. Manager of the new enterprise is Edward Ahren, who has been assistant manager of the Calcasieu Paper Company until a recent change in ownership.

I.C.C. Defers Hearing On Container Rules

WASHINGTON—The Interstate Commerce Commission has ordered suspended until July 31, 1947, proposed rate changes based on the return to standard-weight fiberboard containers for various commodities, and which would have been retroactive.

Various shippers using the lighter-weight fibreboard container which was authorized as a paper conservation measure during the war, opposed the rate change at this time, alleging among other reasons, that large quantities of the war-time weight container were still in use or shippers' inventories.

A hearing has been called in the matter at the Interstate Commerce Commission in Washington at 9:30, E.S.T., January 29.

Schwarz Buys Kokomo Paper

CHICAGO—The Kokomo Paper Company of Kokomo, Ind., is reported to have recently been purchased by the Schwarz Paper Company, which plans to run the Indiana concern as a subsidiary and without any change of personnel. It is understood that the Indiana company facilities will be materially expanded within the near future.

Ryegate Passes To Perkins-Goodwin

ST. JOHNSBURY, Vt.—Interests identified with Perkins-Goodwin Company, New York City, have purchased control of the Ryegate Paper Company, from previous stockholders, according to Thomas B. Farwell, president of the East Ryegate concern. Explanation of the sale and information concerning the Perkins-Goodwin Company was presented by President Farwell at a meeting of company employes, when a Christmas bonus was distributed to the company's 115 employes.

Instrumental in the transfer of stock to the New York company was Albert Newcombe, vice-president of Perkins-Goodwin, and life-long acquaintance of Ray E. Farwell, vice-president of the Ryegate company.

Assistant secretary and manager of the sales department of Perkins-Goodwin, David Edwards has been named a director of the Ryegate Paper Company, under the terms of the sale.

Under the new setup, the Ryegate company retains its same officers — Thomas B. Farwell, president; Ray E. Farwell, vice-president; and T. E. Kloss, general manager and superintendent.

Following the short explanation of new policy, the company announced its Christmas bonus, with President Farwell adding that baskets of fruit were being sent from Florida to each Ryegate family.

Illinois Merchants Elect Gaines as President

SPRINGFIELD, Ill. — S. B. Gaines, Capital City Paper Company, has been elected president of the Illinois State Paper Merchants Association. Emmett Sullivan of the Rockford Wholesale Paper Company is vice-president while John L. Richey will serve as secretary of the group, a capacity in which he acts for other similar groups in the middle west. Frank Weber of the John C. Streibich Company of Peoria was selected as wrapping paper representative on the NPTA committee appointments while Mr. Gaines will serve as the fine paper representative.

Walsh Celebrates Anniversary

CHICAGO — Herbert J. Walsh, sales representative of the Ace Fastener Corporation, is now celebrating his twenty-fifth year in the stationery and allied fields. Mr. Walsh came to Chicago as midwest representative of the Southworth Paper Company. In 1940 he joined the sales force of the Ace Fastener Corporation. Mr. Walsh is active in association activities and has been president of the Great Lakes Travelers Club, chairman of the field division of the National Stationers' Association and chairman of that organization's widely known "House of Friendship."

Why you can't buy all the Caustic Soda, Soda Ash, Sodium Bicarbonate and Chlorine you want . . . and what to expect for 1947 and 1948.

Much has been written about the need for more Caustic Soda, Soda Ash, Sodium Bicarbonate and Liquid Chlorine but, to date, little has been done to explain the reasons for the shortage of these products. In the following Question-Answer columns, Mathieson endeavors to tell American industrialists just why they can't get all they want of these vital chemicals . . . and what the 1947-1948 outlook is for alkali and chlorine production.

Q. *Why are caustic soda, soda ash, sodium bicarbonate and chlorine now in short supply when there was an ample supply before the war?*

A. Expansion of the alkali-chlorine industry during the war *was not permitted* (except to produce an insignificant tonnage) because of the critical shortage of materials that would have been needed for this construction. However, during the same war period, alkali-consuming industries, such as aluminum, rayon, textiles, chemicals and glass food-containers, and chlorine-consuming industries, such as DDT, synthetic detergents and plastics, were allowed to expand their production or construct new facilities. These will continue as growing peace-time consumers.

Q. *Was there less alkali for consumers in 1946 than in 1945?*

A. During 1946 there was less tonnage available than in 1945 due to interruptions in production caused by coal and other strikes. If these interruptions do not recur, there should be some increase in alkali tonnage supply for 1947, but certainly not enough to meet the increased demand.

Q. *How much alkali and chlorine are being exported?*

A. Practically no chlorine. Only a negligible fraction of the pre-war tonnage of caustic soda, soda ash and sodium bicarbonate is now being shipped out of this country.

Q. *Is there any idle capacity in the alkali and chlorine industry?*

A. Only four small government-owned caustic-chlorine plants. Two of these plants have finally been leased to private industry and will be placed in operation in early '47. This additional tonnage is only a "drop in the bucket" when measured in terms of the overall shortage.

Q. *Are alkali and chlorine producers expanding their facilities?*

A. Yes, several producers, including Mathieson, are expanding facilities for one or more products. Some of this expansion was started immediately following VJ Day. But the special heavy equipment necessary (boilers, kilns and turbines) is as high on the industry shortage list as are alkali and chlorine . . . result: expansion cannot possibly be completed until late '47 or early '48.

THE MATHIESON ALKALI WORKS (INC.)
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Mathieson
CHEMICALS

Caustic Soda • Soda Ash • Bicarbonate of Soda • Liquid Chlorine
Chlorine Dioxide • Ammonia, Anhydrous & Aqua • HTH Products
Fused Alkali Products • Synthetic Salt Cake • Dry Ice • Carbonic Gas
Sodium Chlorite Products • Sodium Methylate

Storrs-Bement Turns First Century Mark

BOSTON — The Storrs & Bement Company this year reaches the century mark. Amariah Storrs, founding this paper house in 1847 and carrying on business under his own name, started at Sears Crescent, a building at 54-56 Cornhill. In the beginning, he specialized in box papers and cardboard in a small store, with one floor and a basement, having an assistant. Later he engaged an errand boy. Mr. Storrs did the selling and the bookkeeping. He continued at this address until 1868, when he removed to a considerably larger store than that at the original location. The building he occupied there, however, was totally destroyed in the great Boston fire in 1872, so that Mr. Storrs found a temporary place of business on Bromfield street. Here he remained until 1875, when he removed to 81 Franklin street, corner of Arch street.

In 1884 he took a partner, Edward Bement, in with him. The business was incorporated under the name of A. Storrs & Bement Co. The corporation was bought out in 1887 by C. M. Bryant, W. F. McQuillen and R. C. McQuillen, brothers. These gentlemen enlarged the business, taking on a varied line of commercial papers of all kinds. In 1890 they took over a portion of the building at 85 Franklin street and later the entire building at 85 and 87 Franklin street. The additional space gave room for a large office and warehouse with five floors. For approximately fourteen years, the firm continued at the Franklin street location.

The business increased, however, to such a great extent that larger quarters were necessary. On March 1, 1904, the concern removed to 130-150 Federal street. In January, 1928, the company went to 282 Congress, the present location, occupying a number of floors.

The present officers are: President and treasurer, William N. Stetson, Jr.; vice-president, E. L. Cummings; secretary and sales manager, Paul M. Jones.

Charles H. Baxter, manager of the envelope department, has been with the company 55 years. He started with the bookkeeping department, later becoming telephone operator and timekeeper, and has experience in practically every department. E. E. Lannagan is manager of cardboard and box papers. Robert Burns is manager of the cover, book and writing paper. C. D. Coyle is credit manager. George Wallis is manager of the sales service department. Arthur W. Gardner, cashier, has been with the company more than 50 years.

Nepco Grants Gift to Beautify Village

PORT EDWARDS, Wis. — A gift of $35,000 by Nekoosa-Edwards Paper Company to this village for beautification purposes was revealed December 30 by John E. Alexander, president and general manager of the company.

Directors of Nepco approved the gift recently, and it was accepted at a special meeting of the Port Edwards village board. C. A. Jasperson, village president, said in accepting the gift in behalf of residents of the village, "We naturally are very grateful to Nekoosa-Edwards and I am sure the money will be put to very good use in making our community even more attractive and liveable."

Other recent gifts by the company include one of $42,000, previously announced, to a fund for the construction of Alexander natatorium in Edwards-Alexander Memorial park at Port Edwards, and $500 to each of the five churches in Port Edwards and Nekoosa.

Everest Reports On Marathon Progress

WAUSAU, Wis.—Net sales of Marathon Corporation for the fiscal year ending October 31, 1945, totaled $33,244,137, an increase of $1,303,440 over the previous year, according to an announcement last week by D. C. Everest, in the annual report of the corporation to its stockholders.

The annual meeting will be held January 18. The corporation manufactures food packaging and other paper products.

Mr. Everest's report to the stockholders shows net earnings of $2,734,034, compared to $1,360,437 during the preceding year. After deduction of preferred dividends amounting to $250,000, earnings equaled $1.91 per share on 1,300,000 shares of $6.25 par value common stock outstanding.

Outstanding at the beginning of the last year were 400,000 shares of common stock. These were split on a two-for-one basis and a stock dividend of 10 percent was declared, bringing the total to 880,000 shares. The sale last June of 420,000 shares increased the total common stock to 1,300,000 shares.

From the proceeds, $10,000,000 of the funded debt was paid off and funds provided for the completion of the firm's Canadian pulp mill and other construction.

"The last year," Mr. Everest said in his report, "has been one of the most momentous in the history of the corporation. It has seen completion of the 300-ton daily capacity bleached sulphate mill at Marathon, Ontario.

"This mill, while not completed in time to show any financial return in the last fiscal year, gives Marathon a wholly integrated operation from the cutting of pulpwood to the final printing of the completed package."

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending January 4, 1947

STOCKS

	High	Low	Last
A. P. W.	5⅛	5	5
Armstrong Cork Co.	52½	50¼	52½
Celotex Corp.	31⅞	29	30⅝
Celotex Corp., pf.	20½	20½	20½
Certain-Teed Products Corp.	21¼	19⅜	20¾
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	25¼	24½	25¼
Champion Paper & Fibre Co., pf.	....	....	....
Congoleum Nairn Co.	29	28	28¾
Container Corp. of America	47½	44¼	45
Crown-Zellerbach Co.	32⅜	32	32¼
Crown-Zellerbach Co., pf.	107	105⅝	107
Dixie Cup Co.	31¾	30½	31¾
Dixie Cup Co.—A	51½	50½	51½
Flintkote Co.	37⅞	35	36½
Flintkote Co., pf.	....	....	....
Robert Gair	7⅜	7	7⅛
Robert Gair, pf.	21	21	21
International Paper Co.	53¾	51¼	51¾
International Paper Co., pf.	105	103⅞	103⅞
Johns-Manville Corp.	136¾	132	134
Johns-Manville Corp., pf.	123	123	123
Kimberly-Clark Corp.	23½	22½	23½
Mac Andrews & Forbes	....	....	....
Mac Andrews & Forbes, pf.	....	....	....
Masonite Corp.	63½	61	61
Mead Corp.	20⅜	19½	19¾
Mead Corp., pf. 4¼	....	....	....
Mead Corp., pf. 2	49¼	48	49¼
National Container Corp.	37½	34	34
Paraffine Companies, Inc.	78¼	77½	78¼
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	25½	23⅞	24
Rayonier, Inc., pf.	36⅛	35⅝	36
Ruberoid Co.	57¼	55½	57¼
Scott Paper Co.	47½	47½	47½
Scott Paper Co., pf.	100½	100½	100½
Sutherland Paper Co.	46¼	45½	45½
Union Bag & Paper Corp.	31	28⅜	28¾
United Paperboard Co.	14¼	13⅜	14¼
U. S. Gypsum Co.	107	89	89
U. S. Gypsum Co., pf.	11¾	9⅝	9⅝
West Virginia Pulp & Paper Co.	40	39	40
West Virginia Pulp & Paper Co., pf.	112½	112½	112½

BONDS

Abitibi Pulp & Paper Co. 5s '53	....	....	....
Celotex Corp. 3½s '60	103¾	103¾	103¾
Certain-Teed Products Corp. 5½s '53	....	....	....
Champion Paper & Fibre Co. 3s '65	....	....	....
International Paper Co. 5s '47	....	....	....
Mead Corp. 3s '66	....	....	....

New York Curb Exchange

High, Low and Last for Week Ending January 4, 1947

STOCKS

	High	Low	Last
Great Northern Paper Co.	44⅝	44	44
Hummel-Ross Fibre Corp.	26½	25½	26
St. Regis Paper Co.	10¼	9⅜	9⅞
Taggart Corp.	8½	8½	8½

BONDS

American Writing Paper Co. 6s '61	....	....	....

They look good enough to eat in

Colorful upholstery is another interesting application for GEON polyvinyl raw materials

THOSE handsome dining room chairs are upholstered with a flexible plastic sheet made from one of the GEON polyvinyl resins. Lovely to look at, the upholstery offers many extremely practical advantages, too. Resistance to wear, for example, is just one of a long list that includes resistance to foods, dirt, oils, greases, water, heat, cold, fading, aging, and most other normally destructive factors. The material is easily cleaned with soap and water.

These properties, plus many others, have made versatile GEON the ideal material for literally hundreds of products in the home and in industry —shower curtains and fly swatters— draperies and floor tiles — clothing and luggage — wire insulation and acid tank linings.

And GEON can be pressure or injection molded, extruded, calendered or cast into sheet or film. In solution or latex forms it can be applied as coatings for fabrics and fibres of all kinds as well as for paper and cardboard. Products made from GEON may be flexible or rigid, clear or opaque, brilliantly or delicately colored.

Other raw materials made by B. F. Goodrich Chemical Company include HYCAR American rubber, KRISTON thermosetting resins, and GOOD-RITE brand chemicals. While we make no finished products, we'll be glad to help with special problems or applications. For more information, please write Dept. L-1, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. In Canada: Kitchener, Ontario.

B. F. Goodrich Chemical Company

A DIVISION OF THE B. F. GOODRICH COMPANY

GEON polyvinyl materials • HYCAR American rubber • KRISTON thermosetting resins • GOOD-RITE brand chemicals

Gould Raises Three To Vice-Presidencies

NEW YORK—Harry E. Gould, president, Reinhold-Gould, Inc., New York wholesale paper distributors, celebrated the new year with the appointment of three vice-presidents from his organization. Named were Charles Lander, controller and office manager, Fred H. Pinkerton, sales manager, and Charles V. Morris, director of trade relations.

Mr. Lander, former member of the New York State Banking Department and an executive of the Yokohama Specie Bank, joined Mr. Gould five years ago. A graduate of New York University, he is a member of the Institute of International Finance and the Delta Mu Delta, honor fraternity. Mr. Lander is active in the Graphic Arts appeals of the Federation of Philanthropic Societies, Joint Defense Appeal, and the National Foundation for Infantile Paralysis. He is a member of the Paper Association of New York Credit Men's Committee.

Mr. Pinkerton has been sales manager of Reinhold-Gould for two years. He has played an important part in the educational affairs of several advertising and Graphic Arts Associations. He is a member of the publicity committee of the New York Club of Printing House Craftsmen and Public Relations Chairman for the Young Lithographers Association, program committeeman for the Master Printers of Newark and vicinity and the Public Relations Chairman of the New York Kiwanis Club. A past president of the Industrial Marketers of New Jersey, he is presently membership chairman of that group. Mr. Pinkerton is also active in the affairs of the Direct Mail Advertising Association, The Printing Supply Salesmen Guild Graphic Arts Square Club, Industrial Advertising Association, Litho Club of New York, Sales Executives Club of New York. He was formerly sales manager of Edgar C. Ruwe, Inc., New York printers. Mr. Pinkerton previously held sales and sales promotion supervisory positions with United States Rubber Company, Federal Telephone and Radio Corporation and Schenley Distillers.

Mr. Morris, one-time secretary, sales manager and member of the board of J. E. Linde Paper Company, became associated with Mr. Gould a year and a half ago. For two years previously, he was assistant to the president of William E. Rudge's Sons, New York printing house. As director of trade relations, advertising and promotion for Reinhold-Gould, Mr. Morris is also recognized for his participation in trade association work. He helped organize Veterans Guidance in Advertising and Selling and served as that group's public relations chairman. Presently a member of the Direct Mail Advertising Association's Research Committee, he formerly edited the "DMAA Member's Bulletin," and directed the Association's wartime one-day conferences.

Mr. Morris now edits "The Navigators Log," monthly semi-technical bulletin of The Navigators, a New York association for the advancement of the Graphic Arts; is secretary and public relations chairman of Books by Offset, Inc., public relations chairman for the Greater New York Council of Boy Scouts of America, Staten Island Community Chest and Staten Island Chapter of American Red Cross.

Lewis Brownville Opens Office in Boston

NEW YORK—Lewis-Brownville Sales, Inc., has opened a Boston office January 1 at 10 High Street, with John G. Glover as New England representative. Mr. Glover has been associated with Tileston & Hollingsworth Co. for the past ten years. He succeeds Charles J. Brown who has resigned to accept the position of sales manager at Providence Paper Company.

Mr. Glover has a wide acquaintance in the paper and printing trades in Boston and New England. He has been active in the Boston Club of Printing House Craftsmen serving as publicity director for the last two years. His territory will include Pennsylvania, Maryland, Virginia, West Virginia, as well as New England.

Thilco Foremen Install Chopin

KAUKAUNA, Wis.—Carl C. Chopin was installed as president of the Thilco Foremen's club at a dinner meeting Monday evening, January 5. Other new officers are Ray Schmalz, vice-president; W. W. Owens, secretary; and Clayton Kiffe, treasurer.

Ward Gives Bonuses At Christmas Party

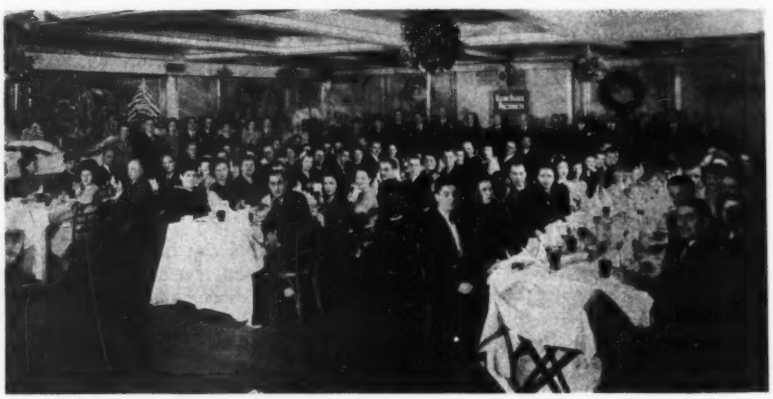
PHILADELPHIA—More than 235 men and women of the D. L. Ward Company, and their affiliates, Paper & Corrugated Specialties Company and Template Reproduction Company, attended the annual Christmas party given by the company in the Warwick Hotel. In addition to the Ward men and women, were some 35 guests.

Ralph G. Luff, president of the Ward organization, distributed Christmas bonuses to all Ward personnel, these cash awards ranging from ten dollars to several thousand, depending upon the length of service and position of the employee.

The Ward Christmas party was held in the ballroom of the Warwick, and lasted from 12 noon until 5 o'clock, ranging all the way from a reception at noon to Christmas dinner, to entertainment, to awards, to the distribution of gifts by Santa Claus and his helpers, and ending with dancing.

Three were awarded handsome watches for being with the organiza- for 25 years. Adelaide A. Benckert, assistant secretary of the company, and Roselyn D. Boyle, received platinum-diamond watches, and John Moller, a gold watch, as well as all three receiving Wardco service pins with 11 jewels. Two Ward men received special pins for being with the company 20 years, these being Stanton Nickel and Robert Kee.

Harry Rambo and Stanley Lomax joined the ranks of the fifteen year division of the club, receiving pins for their service, and the Ten-Year-Club saw three new members: John D. Williams, manager of sales; Morris H. Walther, and Raymond Hill.



KEHR PAPER HOLDS ANNUAL CHRISTMAS PARTY

The yearly Christmas dinner party and dance for employees and guests of Kehr Paper Products Company, Philadelphia, was held at Palumbo's Cafe, with places set for 114. Among the high-lights of the evening were the distribution of Christmas bonuses; a snappy floor show; singing by all, led by Arthur Nebel, from Charlotte, N. C., one of several out-of-town guests; and the presentation of gifts. A. B. Kehr, President received a beautiful desk clock, and A. J. Bouffard, Superintendent, a similar gift, from the plant employes, the presentation being made by Larry Ruffo, shop chairman for the Paper Workers Union.

This headbox stands on its own feet

MONEL HEADBOXES are now standard equipment for Fourdrinier wet ends at plant of The Crane Company, Dalton, Mass. *Fabrication and installation by The Berkshire Sheet Metal Works, Pittsfield, Mass.*

Entirely self-supporting, it's another example of Monel's many wet end uses

Headbox problems are few in The Crane Company's mill at Dalton, Mass.

For Crane has standardized on Monel.*

And Monel headboxes are installed in one piece. They're *self-supporting*. They stay tight and don't leak.

They have no wood joints to swell and spring out of place. They need no protective paint. No preservative of *any* kind.

Smooth . . . and easily cleaned

Monel is both stronger and tougher than mild steel. It resists corrosion by paper stocks and white waters. Its surfaces stay smooth, and never give slime and fibre accumulations a chance to dig in and hang on. That's why it's so easy to keep Monel headboxes slick and clean merely by rinsing them with a fresh water hose.

Readily fabricated

Monel presents no problems to experienced fabricators. They can do almost anything with it. For example, The Berkshire Sheet Metal Works, Pittsfield, Mass., cut, bent and welded this headbox by commonly used methods.

For other jobs too

Because Monel shows no galvanic reaction with copper or brass parts, it has many uses throughout the wet end. Specify it for save-all pans and trays, suction boxes, rods, rolls, rails, fastenings, doctors and slices, as well as for headboxes. Let Monel help make *all* your equipment long-lasting and trouble-free.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET, NEW YORK 5, N. Y.

MONEL

NICKEL (INCO) ALLOYS

MONEL* • "K" MONEL* • "R" MONEL* • "KR" MONEL* • "S" MONEL*
INCONEL* • NICKEL • "L" NICKEL* • "Z" NICKEL* *Reg. U. S. Pat. Off.

John Leddy Heads Thilmany Veterans

KAUKAUNA, Wis.—John Leddy, who has been serving as vice-president of the Quarter Century Club of the Thilmany Pulp and Paper Company, will hold the office of president of the executive committee for the coming year, with Fred Goetzman and Otto Trettin as vice-president and second vice-president, respectively. William Voie has been appointed secretary.

Twenty-one new members, employed by the mill for 25 years or longer, were admitted into the club recently. Membership pins were presented by Mr. Leddy. Special awards were presented by C. R. Seaborne, vice-president in charge of manufacturing, to four employes in recognition of 40 years of service. Engraved gold watches went to Joseph Muthig and Martin Heindel; Alber Klamer received a shotgun, and Karl E. Stansbury received a pair of binoculars.

Ahdawagam Grants Five-Cent Raise

WISCONSIN RAPIDS, Wis.—A straight five-cent hourly increase for men and women employes working a 40-hour week has been promulgated at the Ahdawagam Paper Products Company. The raise follows consummation of negotiations and covers about 200 individuals. It is retroactive of November 4.

The increase, fourth in a year, brought the base rate up to 95 cents per hour and represents an increase of 25 cents during the last 12 months. The wage clause of the contract was reopened on the basis of increased living costs. It was negotiated between the company, represented by Frank Walsh, manager, and Leo Barrette, personnel director, and Local 195 of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers (AFL).

Blank Book Club Holds Annual Christmas Party

HOLYOKE, Mass.—Over 350 members of the National Blank Book Social Club attended a Christmas party at Hotel Roger Smith and after a turkey dinner there was a special entertainment. William Frese was general chairman of the committee on arrangements, assisted by Anna O'Brien; Gordon Halket was ticket chairman; Phil Beaudry, entertainment; Alex Bain, novelties. Officers of the club are: President, Francis Fleming; vice president, Arthur Gendron; treasurer, Gordon Halket.

Kimberly Office Force Organizes

KIMBERLY, Wis.—Clerical employes in the Kimberly mill office of Kimberly-Clark Corporation voted Friday, December 13, in favor of the Papermill Office Workers Union as their bargaining agent. The vote, under supervision of the state labor board, was 54 to 17. This union will be affiliated with the Papermill Workers Union here.

Thilmany Raises Rates By Five Cents an Hour

KAUKAUNA, Wis.—A five-cent hourly increase for all hourly paid employes of Thilmany Pulp and Paper Company has been granted, effective December 29, according to an announcement by company officials. In addition, two-cent hourly increases were granted on certain skilled jobs.

Officials of the company met with representatives of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers, Local 147, and the International Brotherhood of Paper Makers, Local 20, both AFL, to open the contract for consideration of the increases. The raises bring the base pay for women to 84 cents per hour and for men to 95 cents.

Erving Mills Plays Host To Families of Employes

ORANGE, Mass.—More than 300 employes of the Erving and Orange divisions of the Erving Paper Mills with their families attended the fifth annual Christmas party in the Erving town hall.

Following several reels of movies, Santa Claus distributed gifts to the children and refreshments were served. Louis Claflin, treasurer, acted as master of ceremonies. The company will distribute bonuses in January.

Cohen Gives Bonus to Windsor Locks Staff

WINDSOR LOCKS, Conn.—A bonus has been given to all employes of the Windsor Locks Paper Corporation. All employes who have been with the company since April 1 when Leo E. Cohen purchased the mill, received an average week's wage. All employes who have been on the payroll not since April 1 but for three months or more, received one-half week's pay and all the newcomers with a record of less than three months, received $10.

Marathon Stages Party For Employes' Children

MENASHA, Wis.—More than 750 children of Marathon Corporation employes attended the annual Christmas party at Menasha High School auditorium Saturday morning, December 21. Santa Claus distributed gifts and several movies were shown. The party was for children of employes who are 16 years old or younger.

Distributes Christmas Bonus

HOLYOKE, Mass. — The American Writing Paper Corp. has distributed two days' pay to its 850 employes as a Christmas bonus.

Banta 25-Year Club Welcomes New Members

MENASHA, Wis.—New members of the Twenty-Five Year Club of the George Banta Publishing Company were honored at a dinner party at Hotel Menasha Wednesday evening, December 18, George Banta, Jr., vice president of the firm and a member of the club, read the citation and made gift presentations to the new members.

The four guests of honor, who joined the company in 1921 and who have completed 25 years of uninterrupted service, were Fred Rasmussen, general foreman in the pressroom; Earl Hinterthuer, monotype compositor; Merrill Latham of the offset plate department, and Earl S. Stroetz, general foreman of the bindery.

Wives of the men honored were given gardenia corsages and the men wore white boutonnieres. It was also the twenty-ninth wedding anniversary of Mr. and Mrs. Stroetz.

Kimberly-Clark Increases Hospital Benefits

NEENAH, Wis. — Kimberly-Clark Corporation employes will receive increased benefits under the Blue Cross hospitalization plan, according to notices posted last week on the bulletin boards at the various mills of the company. The corporation bears the entire cost of the plan, and the liberalized benefits will go into effect January 1, 1947. The total increased cost will be in the neighborhood of $30,000, and the overall cost of the entire program in excess of $100,000 yearly.

Neenah Old Timers Feted at Party

NEENAH, Wis.—Neenah Paper Company, which was closed all last week for a Christmas vacation, honored its Old Timers Club members during the eighth Christmas party for employes in Germania hall at Menasha, Sunday evening, December 22. With those employes who recently completed 20 years of service, the club has over 100 members.

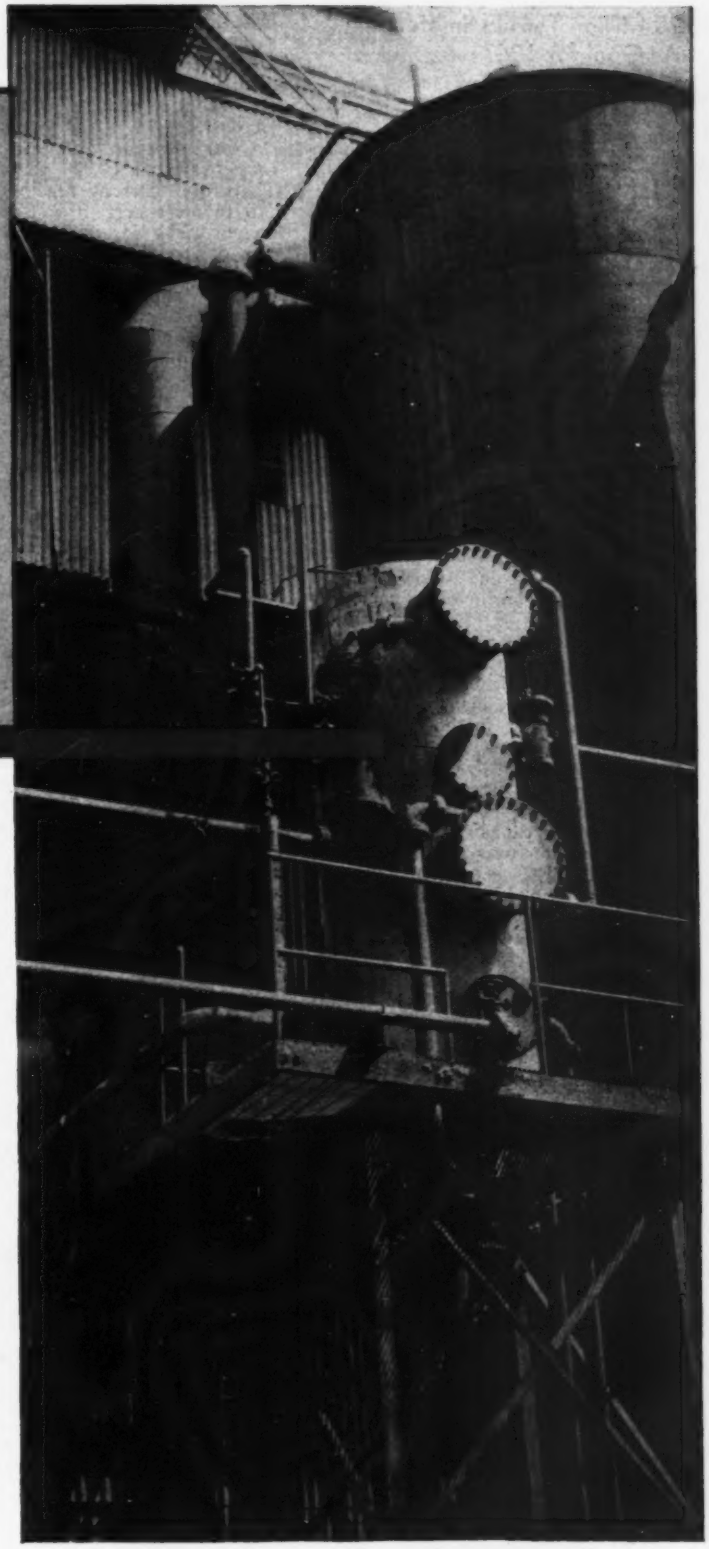
D. K. Brown, president of the company, presented a watch to Ernest Weinke, who has completed 40 years of service.

In his Christmas message, Mr. Brown urged cultivation of a better understanding of each other's problems so that "our free enterprise system can be maintained and the American standard of living continue the best in the world."

L. L. Brown Plays Santa Claus

ADAMS, Mass. — Annual bonuses were distributed at the L. L. Brown Paper Company on Christmas Day. The bonuses were based on the length of time employes had been with the company. The bonus distribution amounted to approximately $12,000 among 150 employes of the company.

HIGH *Overload Capacity*



Unprecedented demand for paper and paper products during the war vastly overtaxed paper making facilities.

At one Southern sulphate mill in which a Foster Wheeler blowdown heat recovery system operated, the two-stage flash heater was consistently in service above design capacity. At times, this heater was pushed to over 100% rated capacity, and although a general plant fear existed that it would break down, no failure occurred.

Foster Wheeler designs all specialty equipment for the paper industry with a margin for safety to permit high overload capacity during critical periods.

FOSTER WHEELER CORPORATION
165 BROADWAY, NEW YORK 6, N. Y.

FOSTER WHEELER

20 Million Tons Estimated As Goal for 1947

(Continued from page 7)

vary in proportion to the level of economic activity. Second, there is the demand arising from the new products developed by the industry in recent years, such as converting papers, building materials and frozen food containers, to mention only a few. Third, there is the demand for further replacement of inventories depleted during the war.

It is pointed out that all of these demands were not satisfied in 1945 or 1946, and that all of them probably will not be satisfied in 1947 at the anticipated level of economic activity.

Production in the pulp and paper industry during 1946 was maintained under highly favorable operating conditions, and these conditions are expected to prevail this year.

In general, field reports indicate that there will be no significant curtailment of output in 1947 due to shortages of raw materials, labor or other necessary items of production. Rather, it is anticipated that production will rise because of an increase in raw material supplies, a more adequate labor supply, increased labor efficiency and, most important of all, a further increase in the productive capacity of the industry.

In 1946 the industry operated close to 100 percent of six-day capacity. By the end of 1947 capacity may be around 1½ to 2 million tons greater than on January 1, 1946, as a result of new plant and machinery installations planned by the industry.

Despite the favorable outlook for production, paper and paperboard are expected to remain in short supply in this country for an indefinite period and mills are planning to continue allocation to customers through the first quarter of 1947 at least, the report continues.

As mills increase output they are increasing allocations to established customers and in many instances are taking on new customers, especially those whose new developments seem to offer a sustained long-range market.

Following the end of OPA some mills adopted a policy of raising prices slowly and moderately so as to eventually determine their cost-price relationships. Other mills raised prices in "one bite," apparently believing that this would be less objectionable to customers than a gradual rise over a period of weeks.

According to Field Service reports, the industry as a whole anticipates in 1947 a rise in average selling prices on the various items produced of 5 to 10 percent over the levels prevailing in the latter part of 1946.

While pulpwood and waste paper receipts as well as domestic wood pulp production continued at very satisfactory levels through November, market wood pulp supplies remain very tight, the report states. Imports of overseas pulp over a period of many weeks have averaged only about 35,000 tons a month, with the expectation that December receipts would not be greater. Inventories of European market pulp declined about 27,000 tons during October.

Consumption of European pulp ranges around 60,000 tons a month. Therefore, current receipts not only fail to meet current consumption but do not allow for inventory accumulation during the next 3 months, when frozen northern European ports will not allow the movement of much pulp. Many pulp purchasing mills are expected to feel the squeeze long before spring shipments from Europe are resumed.

Huyck Firm Elects Braman Chairman

RENSSELAER, N. Y. — Directors of F. C. Huyck & Sons have elected James L. Braman as chairman of the board to succeed Holden M. Ashby, resigned, and promoted several other officers. The reorganization becomes effective January 1. Mr. Braman, first vice-president and treasurer, has been identified with the firm for nearly thirty-five years while Mr. Ashby, former president and chairman since 1938, has been connected with the company for about twenty-nine years. The latter will continue as a member of the board. Other changes announced include the election of Harry Eldridge as first vice-president and treasurer to succeed Mr. Braman. He has been serving as second vice-president and secretary. Charles V. Spencer, assistant to the president, is advanced to be second vice-president and Roderick T. Clarke, legal counsel, becomes secretary.

Frank L. Palmer was designated controller. W. H. A. Short was elected vice-president and managing director of the Canadian branch of the firm at a meeting of directors while Charles V. Spencer and E. J. Wilson, of Albany, were elected to the board to succeed Messrs. Braman and Ashby. Mr. Wilson has been identified with the firm for over thirty years as development engineer.

Nopco Chemical to Replace National Oil Products

HARRISON, N. J.—Directors of National Oil Products Co., Inc., have voted to change the company's name to Nopco Chemical Company, subject to approval of stockholders at their annual meeting in March.

"The proposed change in name," Mr. Charles P. Gulick, president, said, "is in recognition of the company's vastly increased sphere of operations and the number and diversity of its products and markets. The corporation is not an oil company, as its present name would imply, but a chemical manufacturing company. Nearly all of its products are manufactured from oils, fats and waxes by processes involving chemical reaction.

Huber Interests Merged In One Corporation

NEW YORK — On January 1, 1947, the various Huber operations, heretofore conducted as three separate companies, were merged into one, the J. M. Huber Corporation. There is no change in the ownership or management.

Formerly, the Huber Company Incorporated, was the operator of the clay mines and three clay refining plants in South Carolina and Georgia. This company handled the Huber timber interests in Maine, consisting of over 150,000 acres of timberland from which the stumpage is sold largely to the paper and plywood industries.

The previous J. M. Huber Corporation is the producer of channel and furnace carbon blacks, as well as natural gasoline, at Borger, Texas. The company is a substantial producer of natural gas, supplying all its own carbon black requirements with a considerable volume of sales to pipe lines. Its production of crude oil is well over one million barrels annually from its wells in Texas and Kansas, and the company has an extensive drilling program underway in Colorado. In addition to its central office at Borger, Texas, it maintains geological offices at Wichita, Kansas; Denver, Colorado; and Houston, Texas.

J. M. Huber, Inc., has been best known to the consuming industries, as the former selling outlet of the Huber carbon blacks, clays, and rubber chemicals. This company is also a leading printing ink producer, with factories located at Brooklyn, N. Y.; Bayonne, N. J.; St. Louis, Mo.; and Borger, Tex.

Under the merger, the Industrial Products Division has been set up to handle all pigment and chemical sales of J. M. Huber Corporation. This division will shortly move its offices from 460 W. 34th St., to 342 Madison Ave., New York 17, N. Y.

Hewitt-Robins Chicago Offices Consolidated

CHICAGO — Effective December 7, local offices of Hewitt-Robins Incorporated were combined with the moving of the Robins Conveyor Division office from 37 West Van Buren St., to that of the Hewitt Rubber Division at 7 South Dearborn St. Enlarged quarters on the eighth floor at the latter address are adequate to house the offices of both divisions.

Holyoke's Calender Web Was 48 Inches in Width

In the full-page advertisement of the Holyoke Machine Company that appeared in the December 5th issue of the PAPER TRADE JOURNAL the calender illustrated had a web width of 48 inches. Through error the statement was made that the width was 148 inches.

Week's Record of Trends in The Pulp and Paper Market

Office of the PAPER TRADE JOURNAL, Wednesday, January 8, 1947.

Production of paper and paperboard in the United States in 1946 reached a new high of around 19 million tons. This compared with 17.3 million tons in 1945 and the previous best of 17.7 million tons in 1941. Domestic mills operated close to capacity during 1946, with demand consistently running ahead of supply. Plans for expanding and improving mills are expected to add some 2 million tons to the industry's capacity in the next year or so, but various trade quarters have indicated that capacity output will be fully absorbed in 1947. New uses for paper and paperboard, rising consumption stemming from population growth and the fact that the present inventories are smaller in relation to sales than in pre-war years are factors contributing to the maintenance of high demand for at least another year. It is evident, however, that the gap between supply and demand for some types of paper are closing up, and the year 1947 may well see certain segments of the industry returning to something like normal competition. Demand for kraft paper, book paper and newsprint, however, is expected to continue heavy for at least another 2 years.

According to officials of the St. Regis Paper Company the demand for paper and paper products will continue strong this year, and the company's sales in 1947 should exceed $100 million. Such a record company sales volume for 1947 would compare with an excess of $75 million for 1946 and $52.5 million in 1945.

Spokesmen for the Union Bag and Paper Company expect the new year to be one of the best in the paper industry's history. Based on the fact that never before has demand exceeded supply as it does today plus the many new uses for paper and paperboard created during the war, these spokesmen feel that demand will remain heavy for at least another year. These same spokesmen express doubt that exports from overseas to this country will be sufficient to meet requirements for at least a year. An actual shortage of pulpwood in Sweden will prevent that country from utilizing more than 85 percent of its pulp manufacturing capacity for the next 10 or 15 years, even after all restrictions on wood consumption have been removed.

Shares of Marathon Corporation are expected to be admitted to trading on the New York Stock Exchange early this year. The company's report for the fiscal year ended October 31, 1946, showed net sales of $33,244,137 and a net income of $2,734,034, equal to $1.91 a share on the 1.3 million shares of common outstanding at the end of the period. The past year saw the completion of the company's 300 ton daily capacity bleached sulphate mill at Marathon, Ontario, Canada. The mill was not completed in time to show any financial return in the past fiscal year. The new Canadian pulp mill makes Marathon a wholly integrated operation from the cutting of pulpwood to final printing of the completed package. Previously, Marathon had been a purchaser of its pulp requirements.

The index of general business activity for the week ended December 28 declined to 144.1 from 145.7 in the previous week, compared with 114.3 for the corresponding week in 1945. The index of paperboard production rose to 187.0 from 172.8 in the previous week, compared with 103.9 for the corresponding week in 1945.

Paper production for the week ended December 28 was estimated at 73.5 percent, compared with 102.7 for the preceding week, with 60.8 for the corresponding week in 1945, with 62.0 for 1944, with 70.0 for 1943, and with 63.3 percent for the corresponding week in 1942.

Paperboard production for the week ended December 28 was 66.0 percent of capacity, compared with 102.0 percent for the preceding week, with 52.0 for the corresponding week in 1945, with 63.0 for 1944, with 87.0 for 1943, and with 72.0 percent for the corresponding week in 1942.

Wood Pulp

Imports of wood pulp from overseas January 4, 1946, through December 12 amounted to 527,132 short tons. Of this total, 426,037 tons were imported from Sweden and 101,095 tons from Finland. Canadian shipments, meanwhile, averaged 90,000 to 100,000 tons monthly.

With domestic production of wood pulp continuing at peak levels, and Swedish imports very likely to exceed the 500,000 ton mark before the close of the shipping season, indications are that domestic paper mills will have sufficient pulp supplies to last them until next spring.

Rags

Current high prices for cuttings have stirred up talk in certain quarters of mills curtailing purchases of cuttings in favor of wood pulp. However, the present tight situation with regard to wood pulp certainly does not seem to warrant anything like immediate action in this direction.

While demand has slackened somewhat, offerings of domestic white cotton shirt cuttings at $10.50 per 100 pounds delivered mill plus dealer's commission are still taken up. Light percales are still $5.50; cottonades $4.50 and unbleached muslins $11.

Old Rope and Bagging

Market for old rope continues its steady pace with foreign Manila reported 6 to 7c per pound, and domestic at 5.75c. Sisal strings remain 4 to 4½c; and jute strings 4½ to 5c.

Bagging market continues firm with demand still active for most all high grade items. No. 1 gunny at $4.25 to $4.50 for the domestic, and $4.75 to $5 for foreign still prevails.

Waste Paper

Demand for waste paper is showing an expected seasonal easing up, but dealers continue to stock up in anticipation of renewed activity with paper mills once they have completed their inventory check. What little activity there is on the market is conducted at the same levels prevailing during the past few weeks.

Ahdawageam Shipments Rose in 1947

WISCONSIN RAPIDS, Wis. — A large increase in domestic shipments over last year and a decrease in export shipments for military and lend-lease purposes was experienced during 1946 by Ahdawageam Paper Products Company, according to Frank R. Walsh, manager. Sales for 1946 are about ten percent over those during 1945.

Mr. Walsh said in a year-end statement that there have been difficulties during the year due to embargoes, shortage of paperboard, etc., but that the production results have been good under the circumstances.

"We have a large number of orders on hand, enough to run the plant for several months," he continued.

Crane Office Staff Holds Annual Party

DALTON, Mass.—Office employes of Crane & Company held their annual Christmas party at the Irving House. The affair included a dinner and dancing, with the music furnished by the Dixie Serenaders of Pittsfield. The committee in charge included Eleanor K. Kirk, Phyllis Ruding, Mrs. Clarence E. Wellspeak, Ruth L. Bowerman, Florence Pisiewski and Mary O'Connor.

Rising Distributes Holiday Bonus

HOUSATONIC, Mass. — Christmas bonuses were paid 210 employees of the Rising Paper Company including those on the payroll as of Dec. 1. The bonus was based on the following schedule: 10 years or more, three weeks' pay; 5 to 10 years, two weeks; 1 to 5 years, one week; 6 months to 1 year, three days, and less than 6 months, one day. All retired employees were given the maximum benefits.

Waste Prices Rise In Mid-West Area

CHICAGO,—The paper industry in the Chicago area went into 1947 seemingly convinced that whatever business recession might be in store for the country, the paper industry was in an exceedingly fine position to ride through. There continues to be talk, in this area, of a recession of some severity, characterized as the natural aftermath of readjustment policies following the war. Even while its effect is expected to be moderate, the paper trade continues to exercise most of its worries over the long range pulp situation. The bottleneck in the industry is known to be pulp and Chicago paper trade executives expect that a major function of the various associations representing the paper industry will be to emphasize and re-emphasize the need for more pulp and conservation of current supplies.

Market-wise, the tone of the various grades continued exceptionally strong with prices having leveled off at comparatively satisfactory levels according to reports. Strength in the mimeograph and wrapping papers was said to be most pronounced although fine papers were likewise in heavy demand.

The week was chiefly characterized by a sharp increase in waste paper prices. Mill prices of waste paper rose from $1 to $5 above a week ago, responding to bullish forces which have had the market agog for several days. No. 1 mixed was quoted here at $20 a ton, a $1 advance. No. 1 news ranged from $31 a ton to $35 a ton compared with earlier quotations of $30, and No. 1 old corrugated was reported to have brought $32 to $36 a ton against the $31 level of a few days ago. Most mills were reported to be resisting the price rise but competition and bad weather and the actions of some other markets outside of Chicago have led to strong demand. Weather turned bad this week, a Chicago blizzard further strengthening the bullish factors. Mills were reported to have sufficient supplies to prevent shutdowns.

Union Increases Demands On Ancram Mills

ANCRAM, N. Y. — Officials of the International Brotherhood of Papermakers and executives of the Ancram Paper Mills, Columbia county, held a conference with Federal Conciliator John Rooney during the week but the labor controversy remains unsettled. A representative of the labor organization said that the union, which previously agreed to accept an increase of five cents hourly in wages, has reverted to its original demand for ten cents an hour.

Other issues involved are the demand for a closed shop, shift differential and a vacation of two weeks for workers with five years or more of service. The company offered to grant the demand for a union shop if the labor organization would drop its other demands.

Officials of the International Brotherhood of Papermakers at the meeting included Ernest I. Lanbton, regional director, E. R. Brewster and L. R. Gagnon. Mill officials present included Ogden Kilmer, vice-president and treasurer; F. W. Palmer, plant manager; D. Capo, technical director; and F. O. Fleming, assistant vice-president.

Stanwood Cook Opens Own Box Factory

CUMBERLAND MILLS, Me. — As a result of plans formulated during the war, Cook and Foster, a partnership, has started operating a folding box factory here, formerly owned and run by John W. Ellis. Major Stanwood H. Cook and Major James C. Foster, the owners, were in the U. S. Marine Corps together.

Major Cook, who had been with the Robert Gair Company, Boxwood Division, for 18 years, a part of that time as sales manager with headquarters at Haverhill, Mass., resigned his position to go into business for himself. Major Foster was formerly in the steel business in Sterling, Ill.

General lines of folding boxes are being manufactured in the two-story building.

Richard Morse, formerly personnel manager at the Haverhill Division of the Robert Gair Company, Inc., will succeed Mr. Cook.

Container Introduces Concora Kit

CHICAGO — The Container Corporation of America has recently developed a home freezer packing kit represented in a complete assortment of cartons selected for the user of new home freezer cabinets. The Concora kit, as assembled by Container, includes Vapocans, Freezer Pak cartons, together with cellophane and stockinette to fill the immediate needs of the home freeze owner. Included with the attractive kit are complete instructions on how to prepare foods for home freezing.

DeLand Adds Navigation To Powell River Duties

VANCOUVER, B. C.—A. W. DeLand has been appointed president of the Kingcome Navigation Company, Ltd., subsidiary of the Powell River Company. Mr. DeLand succeeds the late S. D. Brooks. Mr. DeLand joined the Powell River Company in 1911 at Kingcome Inlet and became logging superintendent. Later he was moved to Vancouver and became forest manager, a position which he will retain. Kingcome Navigation operates the deep-sea tug "S. D. Brooks" in towing of Davis rafts from Queen Charlotte Islands to Powell River and other tugs for log and barge towing.

Hoosier Trade Finds Demand Continuing

INDIANAPOLIS — With inventories over in most plants and wholesale houses, the industry enters the new year again with more orders than can be filled. Business slowed down somewhat last week because of layoffs on the part of several of the large paper-using plants which also were shut down part of the week for inventory. However, the orders received were for more volume than the industry here could fill and executives are predicting a continued shortage in the market for some months to come. Naturally all prices were strong.

Many conflicting reports are being received anent the roofing and building paper situation during the coming season. It is generally conceded that if other materials are available, there will be no dearth of new construction, but there's the rub. Many building materials are very slow in arriving. Roofing and building paper jobbers are busy, however, balancing their stocks during the off season and all confidently predict sales will be heavier than last year. It is certain there will be numerous strikes in the building trades, most of which contend they are not getting enough pay since the cost of living mounted.

Newsprint continued to be exceptionally short in this section and several papers over the state, following Christmas, discontinued all display advertising for varying periods of time and some were compelled to halt editions entirely. There is much grumbling also concerning the increasing cost of newsprint.

Jobbers in fine papers report steady demand and the shortage in covers, ledgers and other lines continued and will continue. Kraft and all wrapping paper and bags continued to be wanted badly. Demand for waxed paper and cellophane also was heavy and prices strong.

Rag demand for practically all grades was heavy last week with prices generally strong. There appeared to be some variation in the prices offered at various mills. The paper demand also was heavy with all waste items going readily and stocks in this section very low.

John Kennedy Joins Lion Match Staff

HOLYOKE, Mass.—John P. Kennedy, former general superintendent of American Writing Paper Corp. has joined the Lion Match Co. of Long Island City, N. Y. He will be associated with Serge B. Bazavoff, vice-president and general manager of Lion. Lion is one of the big four in the American match produtcion field. The others are Diamond, Universal and Ohio. Kennedy has been with Eagle A for the past 29 years. He resigned this past fall.

Paper chase You probably know the sport. Runners follow a meandering trail marked by paper. These runners are like some manufacturers . . . who try one way and then another to attain *their* objective—*coated paper of high quality*. Experimenting costs them time, money and loss of customer satisfaction.

To manufacture high-grade coated paper—at the speed called for by modern conditions—you need a precipitated Calcium Carbonate of high grade. And Wyandotte Chemicals Corporation is able to supply such a Calcium Carbonate because for years it has made a *business* of producing this chemical . . . steadily increasing its technical knowledge and expertness.

You get the benefits of this experience in the brightness of Wyandotte Precipitated Calcium Carbonate . . . its freedom from grit and abrasiveness . . . its hiding power and ink absorption . . . its uniformity, essential to coating. By the Wyandotte process, Calcium Carbonate becomes a truly *fine* chemical.

TECHNICAL BULLETINS ARE AVAILABLE UPON REQUEST

WYANDOTTE CHEMICALS CORPORATION

WYANDOTTE, MICHIGAN • OFFICES IN PRINCIPAL CITIES

Soda Ash • Caustic Soda • Bicarbonate of Soda • Calcium Carbonate • Calcium Chloride • Chlorine
Hydrogen • Sodium Zincates • Aromatic Intermediates • Dry Ice • Other Organic and Inorganic Chemicals

Wyandotte
REG. U. S. PAT. OFF.

Paper and Paper Stock Imports At New York and Other Ports

NEW YORK IMPORTS

WEEK ENDING JANUARY 4, 1947

Newsprint .....9,810 rolls
Rice Paper .....8 cases
Corrugated Paper .....320 bdls.

NEWSPRINT

N. Y. World Telegram, Sandland, Cornerbrook, 834 rolls.

N. Y. Sun, Sandland, Cornerbrook, 800 rolls.

Clinton Paper Corp., Sandland, Cornerbrook, 1614 rolls.

N. Y. Journal American, Markland, Liverpool, N.S., 895 rolls.

N. Y. World Telegram, Markland, Liverpool, N.S., 651 rolls.

Brooklyn Eagle, Inc., Markland, Liverpool, N.S., 455 rolls.

N. Y. Tribune, Inc., Markland, Liverpool, N. S., 1681 rolls.

Herald Statesman, Inc., Markland, Liverpool, N. S., 60 rolls.

Globe Ticket Co. (Phila.), Markland, Liverpool, N.S., 200 rolls.

Washington Post, (Alexandria, Va.), Markland, Liverpool, N.S., 2517 rolls.

Alexandria Gazette, (Alexandria, Va.), Markland, Liverpool, N.S., 40 rolls.

Arlington Sun, (Alexandria, Va.), Markland, Liverpool, N.S., 20 rolls.

Washington Daily News, (Alexandria, Va.), Markland, Liverpool, N.S., 43 rolls.

RICE PAPER

G. Posner, Clovis Victory, Shanghai, 8 cs.

CORRUGATED PAPER

Corning Glass Works, Mormacsea, Stockholm, 320 bdls.

RAGS, BAGGINGS, ETC.

Meadows Wye & Co., Paul Bunyan, London, 231 bls. paperstock.

W. J. Green Co., Coeur d'Alene Victory, Alexandria, 157 bls. hessian clippings; 5 bls. old bagging.

E. J. Keller Co., Inc., Coeur d'Alene Victory, Alexandria, 210 bls. hessian bagging; 336 bls. old bagging; 320 bls. cotton thread waste.

Kauders Steuber Co., Clovis Victory, Shanghai, 400 bls. cotton waste.

Padawar Corp., Clovis Victory, Shanghai, 538 bls. cotton waste.

New England Waste Co., Clovis Victory, Shanghai, 200 bls. cotton waste.

Williamson Northrup Co., Clovis Victory, Shanghai, 80 bls. cotton waste.

O'Brien Products, Inc., Clovis Victory, Shanghai, 100 bls. cotton waste.

Riverside Mills, Clovis Victory, Shanghai, 92 bls. cotton waste.

N. Schwab & Son, Clovis Victory, Shanghai, 120 bls. cotton waste.

Railway Supply & Manufacturing Co., Clovis Victory, Shanghai, 100 bls. cotton waste.

Atlas Waste Manufacturing Co., Carrillo, Havana, 31 bls. cotton waste; 14 bls. burlap waste.

CASEIN

Aralac, Inc., Wilhelmina, Buenos Aires, 2000 bags, 100,000 kilos.

BOSTON IMPORTS

WEEK ENDING JANUARY 4, 1947

Cellulose Sales Co., Vretaholm, Stugsund, 625 bls. air dry sulphite pulp.

J. Andersen & Co., Vretaholm, Stugsund, 125 bls. air dry sulphite pulp.

Cellulose Sales Co., Vretaholm, Sundsvall, 1812 bls. dry sulphite pulp.

Pagel Horton & Co., Vretaholm, Gefle, 127 bls. woodpulp.

Gottesman & Co., Inc., Vretaholm, Gefle, 583 bls. mechanical pulp.

Jay Madden Corp., Vretaholm, Helsingfors, 106 rolls wrapping paper.

Jewett Heads Promotion For American Can

NEW YORK—F. G. Jewett, formerly assistant manager of sales in the Atlantic Division of American Can Company, has been named manager of sales promotion of the company with headquarters in New York.

Mr. Jewett joined American Can following his graduation from Yale in 1916. He brings to his new position a broad general knowledge of the company's sales activities and the specific needs of Canco customers in the various industries which the company serves.

Norton Distributes Turkeys

WORCESTER, Mass. — Each Norton Co. employe went home with a turkey Christmas Eve as the company continued a Christmas custom started more than 50 years ago. Six thousand birds, weighing from 10 to 18 pounds, dressed, were distributed this year. There was one for each employe, even if he joined the company payroll as late as Monday, officials said.

OBITUARY

Guy Waldo

APPLETON, Wis.—Guy Waldo, 65, a retired paper mill executive and bank official, died at his home Saturday evening, December 28, after a heart attack. He was born here April 4, 1881. He began working for the Flambeau Paper Company, Park Falls, in 1903 as a clerk and was appointed manager in 1905, serving in that capacity and as secretary, following his election in 1910, until his retirement in 1935 when the paper company was reorganized.

He was vice-president of the Park Falls First National Bank, and served as president from 1920 until 1937. In 1940, he became manager of the Whitmore Machine and Foundry Company, Menasha, and negotiated the sale of the whole property to the Marathon Corporation. During the war emergency, he worked for the Thilmany Pulp and Paper Company, Kaukauna, and resigned October 31, 1944. He was a member of Selective Service Board No. 1, Outagamie County, of which Appleton is the seat.

Arvid Peterson

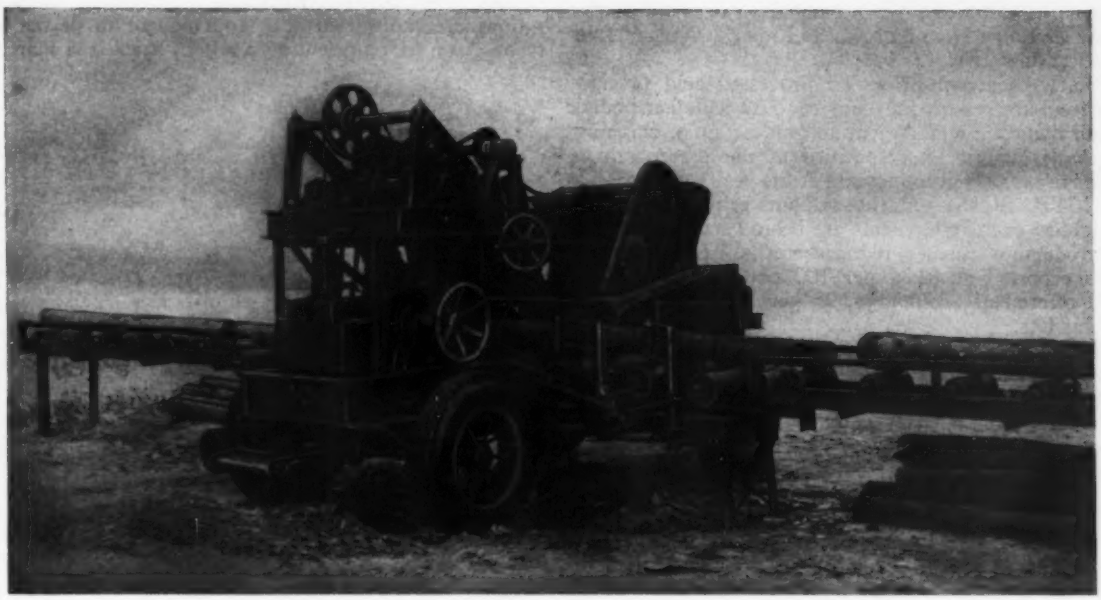
TRENTON, N. J. — Arvid Peterson, chief engineer of the centrifugal pump and compressor department of the De Laval Steam Turbine Company for 20 years died December 19, after a short illness. He was born in Spaneholm, Sweden, and came to this country in 1905 and entered the employ of the De Laval company in 1907 to become later one of the leading technicians in his field.

Mr. Peterson was a graduate of the Royal Polytechnic University of Sweden. He held membership in the American Society of Mechanical Engineers, Propeller Club, American Society of Naval Engineers, Society of Naval Architects and Marine Engineers, American Society of Swedish Engineers, Navy League, Masonic Lodge F & AM, Crescent Temple AAONMS, Kiwanis Club, Torch Club, Trenton Club and the Trenton Country Club. He was a charter member of the Engineers Club of Trenton and a member of the board of directors at De Laval. He formerly was president of the Trenton Country Club.

Gleyn F. Wallenbrock

TERRE HAUTE, Ind.—Gleyn F. Wallenbrock, 47 years old, former president of the Mid-States Paper Company here, died last week in the lobby of a downtown hotel after a heart attack. He came here about 23 years ago as a salesman for the Graham Paper Company and previously had been associated with the Mississippi Valley Paper Company. He was a member of the Masonic and Elks lodges. He had retired because of illness. The widow and three sons survive.

Nekoosa Portable Wood Peeler



SAVES

Freight Costs
Labor
Wood

Write for information

●

Nekoosa Foundry & Machine Works Inc.

Nekoosa, Wis. **U. S. A.**

MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL,
Wednesday, January 8, 1947.

BLANC FIXE—Demand reported active with raw materials still tight. Pulp is currently quoted at $40 per ton, in barrels, car lots, at works; the powder is currently quoted at $60 per ton car lots, f.o.b. works.

BLEACHING POWDER—Adequate supplies to meet current demands although there is some delay in current shipments. Quotations are unchanged. Prices on bleaching powder range from $2.50 to $3.10 per 100 pounds, in drums, car lots at works.

CASEIN—Current prices on processed acid precipitated casein are reported around 46 to 52 cents per pound for both domestic and Argentine grades; f.o.b. shipping point, with quantity not specified at the present time. Supplies are expected to increase at the year's end.

CAUSTIC SODA—Market remains critical with supplies tightest ever. Shipments are behind schedule. Cutback production further reduces stocks. Solid caustic soda is reported at $2.30 per 100 pounds; flaked and ground offered at $2.70 to $2.95 per 100 pounds. All prices car lots.

CHINA CLAY — Supplies becoming increasingly tighter as demand increases. Quotations remain unchanged. Domestic filler clay is currently quoted at from $8.50 to $9 per ton; coating clay is quoted at from $12 to $22 per ton, at mine. Imported clay is quoted at from $22 to $25 per long ton, ship side. All prices quoted in car lots.

CHLORINE—Market tight as demand continues to exceed output, stocks low. Lack of tank cars continues to hamper deliveries. Quotations unchanged. Chlorine is currently quoted at $2 to $2.25 per 100 pounds, in single unit tank cars, f.o.b. works.

ROSIN—Gum rosin in drums, per 100 pounds net, in yard New York, car lots, B, D, E, $8.35; F, G, H, I, K, M, N, WG, $8.55; WW, $8.65. Wood Rosin, per 100 pounds, l. c. l., f.o.b. N. Y., B, $6.35; FF, $7.35; G, H, I, $8.35; WW, $8.55. Business is brisk, with more and more export licenses arriving from Washington.

SALT CAKE—Demand increasing with supplies showing little improvement. Prices remain unchanged. Domestic salt cake is quoted at $15 per ton in bulk. Chrome salt cake is quoted at $16 per ton. All prices in car lots f.o.b. shipping point.

SODA ASH — Demand active as supplies continue short, previous orders filled. Contract orders for 1947 heavy. Quotations continue unchanged. Current prices, car lots, per 100 pounds, are as follows: in bulk, $.95; in paper bags, $1.05; and in barrels, $1.35. This market is not expected to ease up before June, 1947.

STARCH—Supplies are showing steady improvement. Previous orders filled. Starch prices remain unchanged. The pearl grade is quoted at $3.62 per 100 pounds; powdered starch at $3.73 per 100 pounds; both prices in bags, car lots f.o.b. Chicago.

SULPHATE OF ALUMINA—Demand active, supply fair. Quotations continue unchanged. The commercial grades are quoted at from $1.15 to $1.20 per 100 pounds, in bags, car lots, f.o.b. works. The iron free is currently quoted at $1.75 to $2 per 100 pounds, in bags, at works.

SULPHUR—Strong seasonal demand is reported with stocks plentiful to meet all requirements. Annual contracts are quoted at $16 per long ton, f.o.b. mines; the price f.o.b. at Gulf Ports is $20 per long ton. All prices in car lots.

TALC—Domestic and French grades are moving in fair volume with prices steady. Domestic grades are currently quoted at from $16 to $30 per ton at mines; Canadian at $35 to $45 per ton. All prices in car lots.

MARKET QUOTATIONS

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume of business still is being done, under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—

Roll, contract	$84.00	@	—
Sheets	103.00	"	—

Kraft—per cwt.—Carload Quantities Zone A, Delivered

Superstandard Wrapping	*$5.75	@	$6.00
No. 1 Wrapping	*5.50	"	5.75
Standard Wrapping	*5.25	"	5.50
Standard bag	*5.25	"	5.50

* Prices for Standard Wrapping are for 40 lb. base weight; for Standard Bag for 30 lb. base weight.

Tissues—Per Ream 24x36 (480) 10 lb. Zone 1.

Wh. No. 1 Frd.	1.10	@	1.20
Wh. No. 1 M. G.	1.10	@	1.20
Wh. No. 1½	.95	@	1.10
Wh. No. 2	1.00	@	1.10
Wh. Anti-Tar.	2.25	@	3.50
Kraft Unbl.	1.15	@	1.25
Manila No. 2	.90	@	1.05

Toilet—Per Case of 100 rolls 1 M Sheets.

Unbleached	4.47	@	5.50
Bleached	6.50	"	—

Paper Towels — Per Case of 3750 Zone 1.

Wh. C. fold 11x13¾	4.09	@	—
Br. Sgl. fold 10 in.	2.37	"	2.48
Br. M'tif'd 9½x14¾	3.48	"	—
Br. M'tif'd 9¼x9¾	2.37	"	2.48

Manila—per cwt.—C. l. f. a.

No. 1 Jute	11.25	@	—
No. 1 Manila 35 lb.	6.00	"	7.00

Boards, per ton—

News	*70.00	@	75.00
Chip	*67.50	"	73.00
Sgl. Mla. L1 Chip	*80.00	"	89.00
White Pat. Coated	*86.00	"	101.50
Kraft Liners 42 lb.	*84.00	"	100.00
Binders Boards	94.00	"	126.00

Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—White, Assorted Items

	Bonds		Ledgers
100% Rag Ext. No. 1	$39.75 @ $46.75		$40.90 @ $48.00
100% Rag.	32.85 " 38.50		34.00 " 40.00
85% Rag	.... "		30.55 " 38.75
75% Rag	24.30 " 28.50		24.45 " 30.00
65% Rag	.... "		.... " ....
50% Rag	20.05 " 24.50		21.25 " 25.75
25% Rag	17.85 " 21.75		19.00 " 23.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers.. White, Assorted Items

	Bonds		Ledgers
No. 1	$18.00 @ $14.50		$13.15 @ $16.00
No. 2	11.25 " 13.75		12.25 " 15.00
No. 3	.. "		.... " ....
No. 4	10.60 " 13.00		11.75 " 14.25

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Coated Paper

No. 1 Glossy Coated	$14.70	@	$16.75
No. 2 Glossy Coated	13.75	"	15.50
No. 3 Glossy Coated	13.20	"	16.00
No. 4 Glossy Coated	12.80	"	14.50
No. 1 Antique (Watermarked)	11.35	"	12.75
No. 2 Offset	10.65	"	12.25
A Grade E. F.	10.60	"	12.00
A Grade S. & S. C.	11.00	"	12.50
B Grade E. F.	10.30	"	11.75
B Grade S. C.	10.70	"	12.25
C Grade E. F.	10.00	"	11.50
C Grade S. C.	10.40	"	12.00
D Grade E. F.	9.70	"	11.00
D Grade S. & S. C.	10.10	"	11.50

Ivory & India at $.50 cwt. extra.

Wood Pulp

Domestic mill prices delivered with former OPA freight allowances.

	Per Short ADT		
Groundwood	$75.00	@	—
Unbleached Sulphite	105.00	"	—
Bleached Sulphite	115.00	"	—
Bleached Soda	105.00	"	110.00
Unbleached Kraft	95.00	"	97.50
Southern Kraft	90.00	"	—

Canadian mill prices delivered with freight allowances of $7.50 per ADT; unless otherwise specified:

	Per Short ADT		
Regular Kraft	$95.00	@	$97.50
Select Unbleached Kraft (no freight allowance)	105.00	"	—
Unbleached Sulphite	105.00	"	—
Glassine Unbleached Sulphate (no freight allowance)	90.00	"	—
Bleached Soda	110.00	"	115.00
Groundwood	70.00	"	75.00
Sideruns Pulping News	75.00	"	—
Hardwood and Specialty Grades	Nominal		

Swedish wood pulp prices, per ton of 2,000 lbs. air dry weight on dock usual Atlantic and Gulf ports with an average freight cost of about $9.00 per short ton included. Subject to change as it is said these prices are not satisfactory to Swedish producers:

	Per Short ADT
Bleached Sulphite	$120.00
Bleached Kraft	126.00
Unbleached Sulphite	95.00
Unbleached Kraft	89.00

Finnish quotations f.o.b. shipping point

	Per Short ADT
Bleached Sulphite	$165.00
Unbleached Sulphite	132.50
Unbleached Sulphite (special grade)	137.50
Unbleached Sulphate	132.50
Unbleached Sulphate (special grade)	159.00

Other European countries, at the present time, are not quoting on prompt and forward deliveries of wood pulp, because they have no tonnage available for export.

New Domestic Cotton Cuttings

(Prices delivered Mill Plus Dealer's Commission)

Finnish quotations f.o.b. shipping point

White Shirt	$10.50
Light Silesias	7.50
Unbleached Muslin	11.00
White Back Blue Overalls	8.25
Blue Overalls	7.75
Unbl. Fancy Shirt	4.50
Light Percales	5.50
Light Prints	3.25
Washables	4.00
Bleachable Khaki	5.50
Unbleachable Khaki	3.00
Cottonades	4.50

TITANOX . . . *the brightest name in titanium pigments*

"Show-through" GHOSTS don't show up here!

You rid yourself of "show-through" ghosts when TITANOX is used to whiten, brighten and opacify your paper stocks. These well-known titanium dioxide pigments have been employed for many years by paper manufacturers who wish to improve the opacity and whiteness of their products.

The high refractive index of TITANOX pigments makes for greater opacity in bible, book, magazine and all other types of paper. Their fine particle sizes make for easier, more thorough dispersion.

Our paper laboratory staff is ready and always willing to help you with your paper problems. Call on your nearest Titanium Pigment Corporation office today.

● Aerial view of the Titanium Pigment Corporation plant at Sayreville, New Jersey, one of the factories where TITANOX pigments are produced to the standards of unusually high quality that make them preferred pigments.

TITANOX
TRADE MARK

TITANIUM PIGMENT CORPORATION
SOLE SALES AGENT

111 Broadway, New York 6, N. Y.
180 No. Michigan Ave., Chicago 2, Ill.
350 Townsend St., San Francisco 7, Cal.
2472 Enterprise St., Los Angeles 21, Cal.

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$5.00
No. 1 Whites Miscellaneous	4.25
No. 2 Whites Repacked	4.00
No. 2 Whites Miscellaneous	3.50
Blue Overalls	3.75
Thirds and Blues Repacked	3.00
Thirds and Blues Miscellaneous	2.50
No. 1 Roofing Rags	1.85
No. 2 Roofing Rags	1.75
No. 3 Jute Bagging	1.65
No. 4 Brussels and hard back carpets	1.65
No. 5A Roofing Rags	1.65

New Foreign Cotton Cuttings

(Prices delivered Mill)

	Per 100 lbs.
New Dark Cuttings	$6.00 to ....
New Mixed Cuttings	6.50 " ....
Light Silesias	9.00 " 10.00
Light Flannelettes	8.00 " 9.00
New White Cuttings	13.00 " 15.00
Fancy Shirt Cuttings	9.00 " 10.00
Light Prints	8.00 " 10.00
Bleachable Khaki, No. 1	7.00 " 7.50
Unbl. Khaki, No. 1	6.25 " 6.75

Old Foreign Rags

(F.O.B. New York)

	Per 100 lbs.
No. 1 White Linens	$14.00 to 16.00
No. 2 White Linens	12.00 " 13.00
No. 3 White Linens	8.00 " 9.00
No. 4 White Linens	8.00 " 9.00
No. 1 White Cottons	10.00 " 12.00
No. 2 White Cottons	8.00 " 9.00
No. 3 White Cottons	6.50 " 7.00
No. 4 White Cottons	5.00 " 5.50
Extra Light Prints	7.50 " 8.00
No. 1 New Light Prints	6.25 " 6.75
Med. Light Prints	5.25 " 5.75
Dutch Blue Cottons	5.25 " 5.50
Checks and Blues	4.00 " 4.25
Linsey Garments	4.50 " 5.00
Dark Cottons	3.75 " 4.00
Old Shopperies	3.25 " 3.50
New Shopperies	3.25 " 3.50

BAGGING

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$4.75 to 5.00
Domestic Gunny, No. 1	4.25 " 4.50
Light Wool Tares	4.50 " 4.75
Heavy Wool Tares	4.75 " 5.00
Bright Bagging	4.25 " 4.50
Foreign Manila Rope	6.00 " 7.00
Domestic Manila Rope	5.75 " ....
Jute Strings	4.50 " 5.00
No. 1 Sisal Strings	4.00 " 4.50
Mixed Strings	1.75 " ....

Waste Paper

Prices to Mills

(Dollars Per Ton)

F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$110.00
No. 1 Hard White Envelope Cuts	85.00	"	100.00
No. 1 Hard White Shavings, unruled	100.00	"	—
No. 1 Hard White Shavings, ruled	80.00	"	90.00
Soft White Shavings, one cut	85.00	"	90.00
No. 1 Soft White Shavings	75.00	"	80.00
Soft White Shavings, Misc.	65.00	"	—
No. 1 Fly Leaf Shavings	40.00	"	—
No. 2 Fly Leaf Shavings	(nominal)		
No. 1 Groundwood Fly Leaf Shavings	30.00	"	33.00
No. 2 Mixed Groundwood Fly Leaf Shavings	(nominal)		
Mixed Colored Shavings	(nominal)		
Mixed Groundwood Colored Shavings	(nominal)		
Overissue Magazines	(nominal)		
No. 1 Heavy Books & Magazines	38.50	"	—
Mixed Books	22.00	"	25.00
No. 1 White Ledger	50.00	"	52.00
No. 2 Mixed Ledger, colored	40.00	"	45.00
New Manila Envelope Cuttings, one cut	65.00	"	75.00
New Manila Envelope Cuttings	65.00	"	75.00
Extra Manilas	(nominal)		
Mixed Kraft, Env. & Bag Cuttings	70.00	"	—
Kraft Envelope Cuttings	80.00	"	85.00
Triple Sorted, No. 1 Brown Soft Kraft	55.00	"	—
New 100% Kraft Corrugated Cuttings	55.00	"	60.00
No. 1 Assorted Old Kraft	40.00	"	—
New Jute Corrugated Cuttings	27.00	"	—
Old 100% Kraft Corrugated Containers	(nominal)		
Box Board Cuttings	23.00	"	—
White Blank News	45.00	"	—
Overissue News	35.00	"	—
No. 1 News	25.00	"	26.00
No. 1 Mixed Paper	19.00	"	21.00
Old Corrugated	28.00	"	30.00
Mill Wrappers	22.00	"	25.00

Twines

All Prices Nominal

(F. o. b. Mill)

(Soft Fiber)

Coarse Polished—			
India	.26	@	.29
Fine Polished—			
Fine India	.31	"	.35
Unpolished—			
Paper Makers	.20	"	.26
Tube Rope	.22	"	.27¼
Wrapping	.26	"	.33½
Cotton	.70	"	—
(Hard Fiber)			
Mex. Sisal	.21	"	.24
Manila	.33	"	—
(Hemp)			
Polished Hemp	.63	"	—

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—	
New White No. 1	.07¼
New White No. 2	.05¾
Light Silesias	.05¾
Black Silesias, soft	.03¾
New Unbleached	.07½
Washable Prints	.04¼
Washable No. 1	.03
Blue Overall	.05½
Cottons—Acording to grades—	
Washable Shredding	.01¾
Fancy Percales	.04¼
New Black Soft	.03¾
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.03½
Bleachable Cotton Cuttings	.04¼
Men's Corduroy	.03½
Ladies' Corduroy	.03
Cottonades	.03¾

Domestic Rags (Old)

White No. 1—Repacked	3.80	to	4.00
Mixed White	3.50	"	—
White No. 2—Repacked	2.90	"	—
Thirds and Blues—			
Miscellaneous	1.80	"	2.50
Repacked	2.20	"	—
Roofing Stock—			
Foreign No. 1	1.85	"	—
Domestic No. 1	1.75	"	—
Domestic No. 2	1.65	"	—
Roofing Bagging	1.35	"	—
Old Manila Rope	5.75	"	—

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—			
Foreign	Nominal		
Domestic	3.00	to	3.50
No. 1 Clean Bright—			
Sisal Strings	.04	"	—
No. 2 Clean Bright—			
Sisal Strings	.03	"	—
Sisal Jute	.02½	"	.02¾
Scrap—			
No. 1	3.25	"	3.50
No. 2	1.75	"	1.85
Wool Tares, heavy	4.00	"	4.25
No. 1 New Light Burlap	3.50	"	4.00
New Burlap Cuttings	3.75	"	4.00

Old Papers

(F. o. b Phila.)

Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	@	$115.00
No. 1 Hard White Shavings, unruled	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News	45.00	"	50.00
Soft White Shavings, Misc.	65.00	"	70.00
No. 1 White Ledger	52.00	"	53.00
No. 2 Ledger, colored	42.00	"	45.00
No. 1 Heavy Books & Magazines	38.50	"	40.00
Overissue Magazines	nominal		
New Manila Envelope Cuttings	65.00	"	75.00
No. 1 Assorted Old Kraft	40.00	"	—
No. 1 Mixed Paper	19.00	"	21.00
Box Board Cuttings	23.00	"	25.00
Kraft Corrugated Cuttings	nominal		
Old Corrugated	28.00	"	30.00
Overissue News	35.00	"	—
No. 1 News	26.00	"	30.00

BOSTON

Old Papers

(F. o. b. Boston)

Mill Prices, Baled

No. 1 Hard White Shavings, unruled	5.00	@	6.00
No. 1 Hard White Shavings, ruled	5.00	"	6.00
Soft White Shavings, Mis.	5.00	"	6.00
No. 1 Fly Leaf Shavings	1.67½	"	—
No. 2 Fly Leaf Shavings	2.00	"	—
No. 1 Groundwood Fly Leaf Shavings	1.25	"	—
No. 2 Groundwood Fly Leaf Shavings	.90	"	—
Mixed Colored Shavings	.75	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
Hard White Envelope Cuts, one cut	3.37½	"	—
Triple Sorted No. 1 Brown Soft Kraft	2.50	"	—
Mixed Kraft Env. & Bag Cuttings	2.75	"	—
Kraft Envelope Cuttings	3.75	"	—
No. 1 Heavy Books & Magazines	1.92½	"	—
New Manila Envelope Cuts, one cut	2.87½	"	—
New Manila Envelope Cuttings	2.65	"	—
White and Colored Tabulating Cards	3.25	"	—
Groundwood Tabulating Cards	1.35	"	—
White Blank News	1.65	"	—
No. 1 Assorted Old Kraft	—	"	3.00
No. 1 Mixed Paper	—	"	.95
Overissue News	—	"	1.25
Box Board Cuttings	.72½	"	—
New Corrugated Cuttings, Kraft	2.25	"	—
Old 100% Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	—	"	1.40
Jute Corrugated Cuttings	1.07½	"	—

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	5.00	@	—
Domestic	5.25	"	—
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.50	"	—
Manila Rope—			
Foreign	(nominal)		
Domestic	5.75	"	—
Soft Jute Rope	4.50	"	5.00
Jute Carpet Threads	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	(nominal)		
Domestic	3.00	"	3.25
South America	—	"	3.25
Wool Tares—			
Foreign	4.50	"	—
Domestic	4.50	"	—
Aust. Wool Pouches	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	5.50	"	6.00
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.06	@	.06¼
Fancy Percales	.04¼	"	.05
New White No. 1	.06¾	"	.07
New Light Flannelettes	.09½	"	.10
Canton Flannels, Bleached	.06	"	.06¼
Underwear Cutters, Bleached	.06¼	"	.06¾
Underwear Cutters, Unbleached	.05¾	"	.06
Silesias No. 1	.06	"	.06¼
New Black Silesias	.03	"	.03¼
Red Cotton Cuttings	.03½	"	.04
Soft Unbleached	.11½	"	.12
Blue Cheviots	.05½	"	.04
Fancy	.02¾	"	—
Washable	.02¾	"	—
Khaki Cuttings	.02¾	"	.03
O. D. Khaki	.06	"	.06¼
Corduroy	.03¼	"	.03½
New Canvas	.06¼	"	.06½
B. V. D. Cuttings	.11½	"	.12

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	@	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues, Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.90	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A.	1.35	"	—
Quality B.	1.20	"	—
Quality C.	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)

Mill Prices, Baled

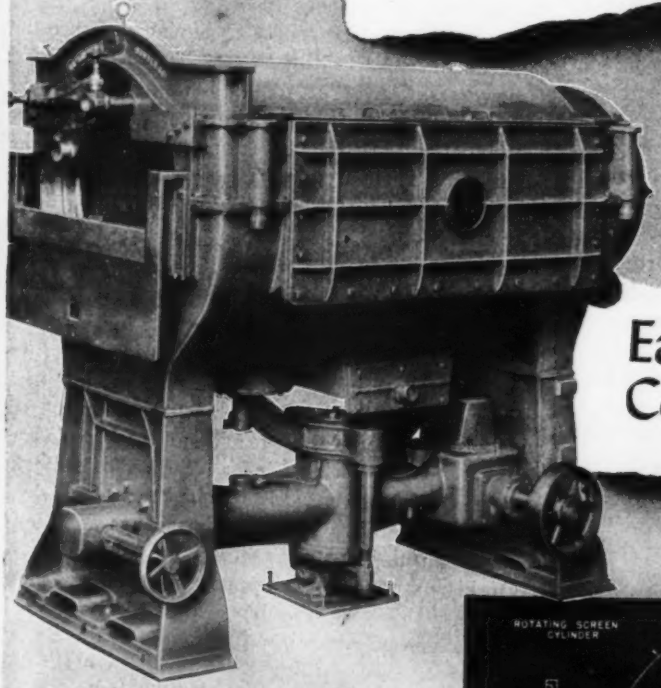
Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$110.00	@	$120.00
No. 1 Hard White Shavings, unruled	105.00	"	115.00
No. 1 Soft White Shavings	80.00	"	95.00
No. 1 White Ledger	55.00	"	65.00
No. 1 Heavy Books & Magazines	40.00	"	43.00
White Blank News	43.00	"	49.00
Mixed Kraft Env. & Bag Cuttings	75.00	"	85.00
No. 1 Assorted Old Kraft	45.00	"	55.00
Overissue News	38.00	"	42.00
No. 1 News	30.00	"	—
No. 1 Mixed Paper	19.00	"	—
Old Corrugated	32.00	"	35.00
Mill Wrappers	25.00	"	29.00

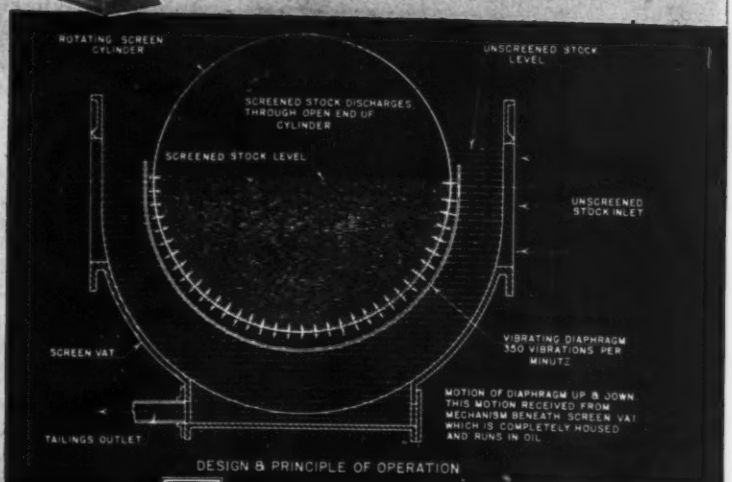
Gentle Screening Action
Correct Stock Agitation

Eliminates Dirt and
Lumps from Stock

Passes Uniform
Fibres . . .
Perfectly Mixed

Easily Cleaned . . .
Completely Accessible




ROTATING SCREEN CYLINDER
UNSCREENED STOCK LEVEL
SCREENED STOCK DISCHARGES THROUGH OPEN END OF CYLINDER
SCREENED STOCK LEVEL
UNSCREENED STOCK INLET
SCREEN VAT
VIBRATING DIAPHRAGM 350 VIBRATIONS PER MINUTE
MOTION OF DIAPHRAGM UP & DOWN. THIS MOTION RECEIVED FROM MECHANISM BENEATH SCREEN VAT WHICH IS COMPLETELY HOUSED AND RUNS IN OIL
TAILINGS OUTLET

DESIGN & PRINCIPLE OF OPERATION

the JONES SCREEN

Jones

E.D. JONES & SONS COMPANY-PITTSFIELD, MASS.
Builders of Quality Machinery for Paper Mills

PAPER TRADE JOURNAL

Title Reg. U. S. Pat. Off.

W. L. Cook, Editor

Twenty Million Tons

Twenty million is a nice round number; it's easy to remember and to quote, and it makes good headlines. Aside from that, it represents possibly a million tons of relief to a demand that this year has pressed the industry's nineteen million tons far beyond the bulging point. Citation of this tonnage as the probable production of the paper industry for 1947 this week put the United States Department of Commerce into the headlines; it also served to remind all the long list of other industries that rely on paper or paper products, that this industry is able to foresee a moderately increased production, and that it anticipates a continued healthy demand for its output.

In its prognostication, of course, the Department assumes none of the attributes of an original prophet. Rather, according to those who know its methods well, it has done a painstaking job of collecting and collating information from many sources, and in presenting them it is setting forth a well-digested summary of the optimism, the pessimism, the hopes and the doubts of makers, of sellers and of buyers and users. To that extent the views of the Department represent not so much a bureaucratic pronouncement as they represent a weighted average of all the views of those who make it their business to study the trends of industry.

For the production the Department takes as its base the estimated nineteen million tons that final reports will show as the past year's output. To this it adds an approximate five per cent, represented as the new capacity of new plants and of renovated machines in old plants. For the absorption of this tonnage the Department turns to its studies of other industries representing the potential market.

In this branch of its study the agency finds no reason for doubt as to the ability of the market to continue its pressure on production facilities. Even though some of the emergency characteristic of the demand is eliminated, it is expected that normal uninflated market demands will call for at least 20 million tons. To support this view the report dispassionately lists three of the chief sources from which the demand may be counted on to come.

First, and this is too often unduly emphasized by those who are fearful lest a slump take the bottom out of the market, there is the fluctuating demand that rises and falls as other trade conditions ride high or scrape the bottom. It is admitted that this may have some slight, probably temporary effect on certain lines. On the whole, some opinion holds that a brief recession in other trade probably would have effect on the paper business in the price scale.

But there is found to be a steady and reliable demand for replacement of inventories, and while this demand might be given pause if price uncertainties made such a course prudent, its final pressure could not be held off for any great time, and a period of hand-to-mouth buying might be expected to end as soon as prices appeared to have a found a permanent base. The depleted size of many smaller city newspapers, the used appearance of paper bags that are still used by local merchants in some eastern communities bear mute testimony to a logical source of demand that still is being unserved.

For its third major source of buying pressure the Department lists a field that might be generally listed as new uses. Converting papers, building papers, and the now blossoming frozen food industry all represent substantial and steady outlets for the products of the paper mill. Their weight has as yet been undetermined, but their substance is of undoubted solid character.

Jacob Kindleberger

A man of stout and abiding faith in his industry, his country and in himself has been taken from the scene. The paper industry, in mourning the loss of a pioneer in the vegetable parchment section of its widely spread services, perceives and acknowledges that the factors which made him a tower of strength in the field that he chose to serve had their roots deep in a character which revealed him always as a self-reliant, helpful, industrious citizen.

Of his extremely handicapped start in life most have heard the story. Combined with economic need was a dangerously impaired vision, and to the almost herculean task of earning a living at an early age while accumulating a store of knowledge for which he was avidly eager was added the risk that the pursuit of knowledge might further harm his sight.

An underlying sense of basic values showed itself early in his life, when from college and a financing plan which had produced for him an income that, in those years was almost fabulous, he turned to the paper business for a life-time career. He is remembered by those who knew him in those early years as a salesman who was a prodigious worker and a man of great magnetism. These qualities he brought to the business which he founded, and to the Kalamazoo Valley in which he was to settle and become a leading citizen.

Jacob Kindleberger's vision ranged far beyond the possibilities of purely industrial success. There was always some greater god that could be attained, an added means whereby he could be of service. His faith was tremendous, his intellectual drive seemed limitless and these, sparked by convictions that were

founded in a deeply religious spirit, caused him to spend his strength recklessly, not that he should pile up a huge bank balance but that he would be able to leave the world a better place than he found it.

The good is oft interred with their bones—the poet has told us, and in the passing of Jacob Kindleberger a vital force for good has been taken from surroundings which he had a great influence in shaping. But it cannot be said that some substantial portion of this god has not been left as a monument which he helped build for himself. The town of Parchment, the church in which he was an active member, the former pastors who came back to pay their last respects at his funeral service, all these exhibit tributes to his character that make it seem but a natural consequence that he should have been a pillar of industry.

Man on the Spot

Bright lights had drawn the little boy to the window of the hall in which his father, along with a score of other employes, was to be added to the list of those who had worked for twenty-five years in the local paper mill. The president of the company and a handful of visiting dignitaries were gathered at the upper end of the room with the manager of the mill, and flowers brightened the tables at which a dinner was to be served presently. To the boy the event served as occasion for an unconscious tribute to the man who, locally, was the whole company.

"Gee, Mister," said the boy; "It looks swell, don't it. My pop's in there. That's Tom Jones in the gray suit; he's the boss at the mill." (The name here used is fictitious because there are many such men.) "Who is that man he's talking to?"

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1946		Corresponding Weeks—1945	
November 23	106.6	November 24	91.4
November 30	103.0	December 1	97.5
December 7	106.6	December 8	99.0
December 14	106.7	December 15	99.0
December 21 (Revised)	102.7	December 22	96.5
December 28	*73.5*	December 29	60.8

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1945	86.7	89.4	90.2	88.1	89.8	91.2	80.8	88.6	90.2	95.9	95.5	91.0	89.7
1946	94.7	98.4	104.4	102.7	100.7	104.6	94.0	104.7	101.3	106.4	*105.5*		

COMPARATIVE YEARLY SUMMARIES

	1939	1940	1941	1942	1943	1944	1945	1946
Year to Date	83.4	85.6	97.4	90.4	87.8	88.1	89.7	*101.4*
Year Average	83.4	85.6	97.4	90.4	87.8	88.1	89.7	

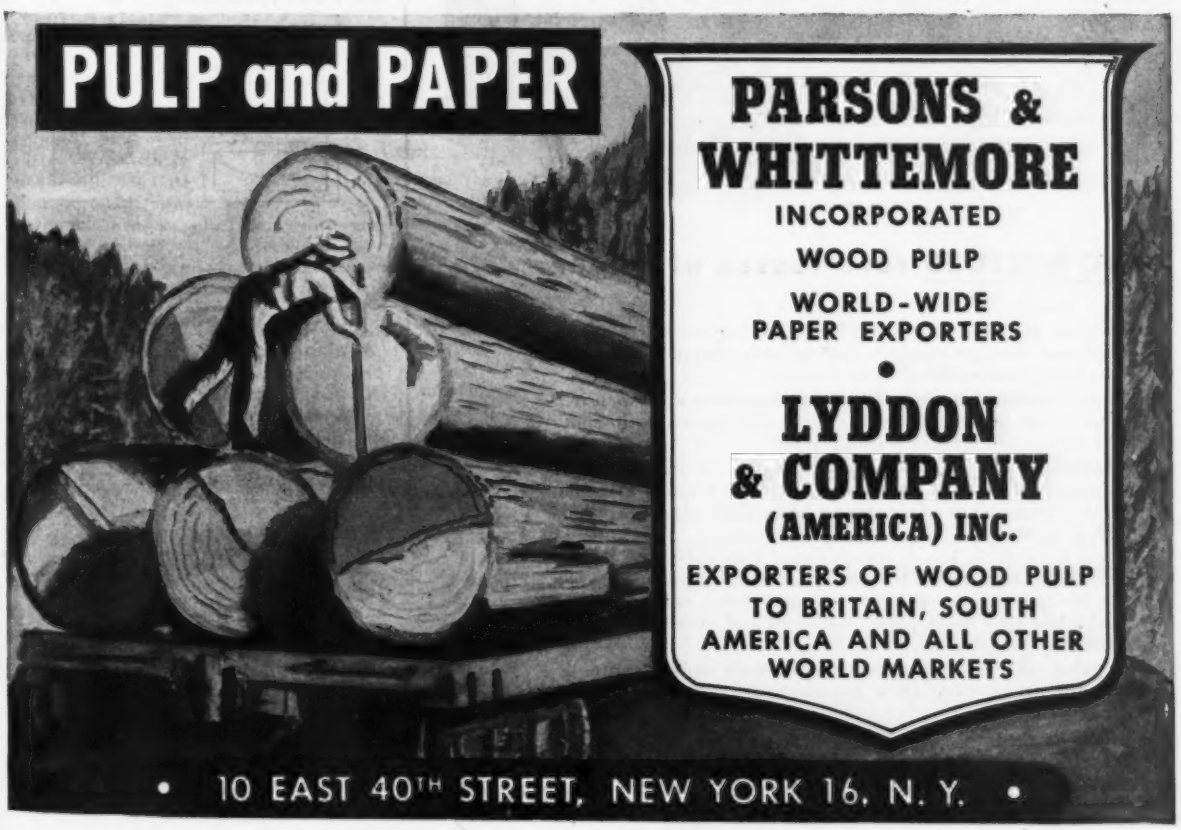
PAPERBOARD OPERATING RATIOS†

Current Weeks—1946		Corresponding Weeks—1945	
November 23	100	November 24	91
November 30	94	December 1	96
December 7	99	December 8	97
December 14	102	December 15	98
December 21	102	December 22	92
December 28	66	December 29	52

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year Avg.
1945	91	95	97	97	96	96	86	90	91	97	95	85	93
1946	90	97	100	99	94	97	89	99	96	100	*99*		

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.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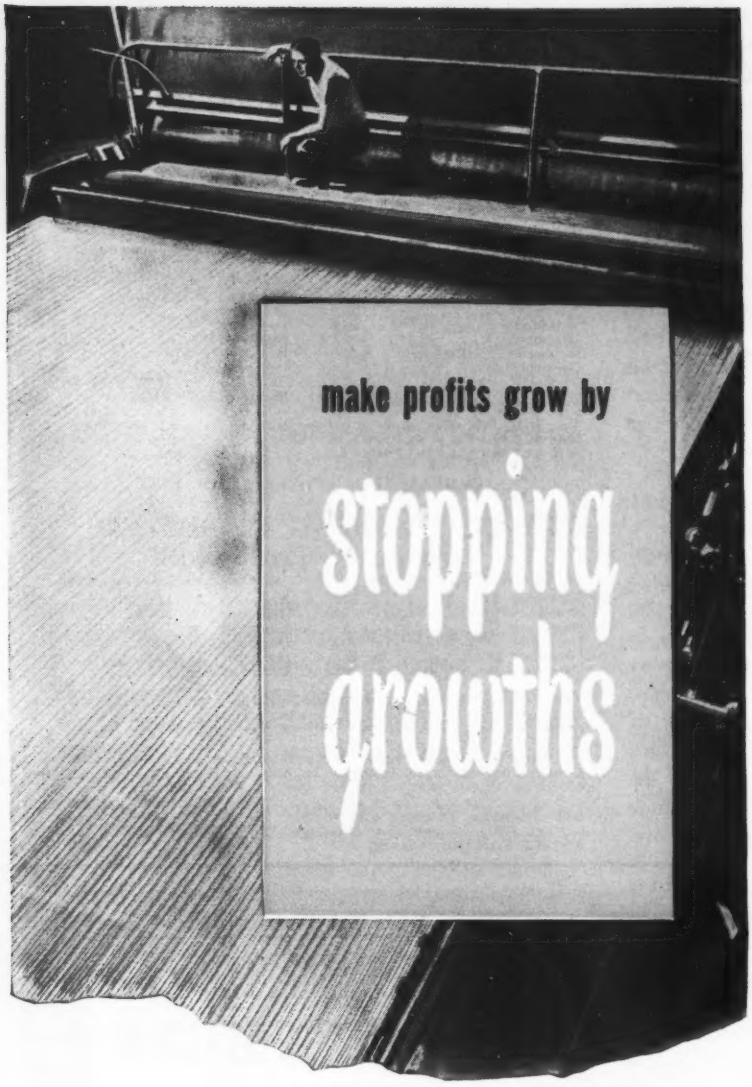

DOWICIDES curb losses of paper

In paper manufacturing—and in other industries where micro-organisms damage materials and decrease output—Dowicides turn losses into profits.

In paper mills, slime flourishes. And slime damage is expensive. Slime causes machine "breaks," defective paper due to spots and holes, and excessive wash-up time.

Conditions fostering slime growth vary. So do organisms causing slime—algae, fungi and bacteria. Control calls for careful analysis of slime types and application of proper killing agents.

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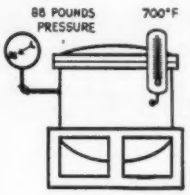

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Manufacture of Pulp and Paper and Related Products from Wood in Western Germany*

By J. N. McGovern[1] and G. K. Dickerman[2]

Abstract

The German pulp and paper industry, as judged by investigations in the western half of the country, was found to be less advanced than the same industry in other important pulp-producing countries. It was only in the development of technologies for certain war-time expedients or in a few uses of pulp and paper products as substitutes for critical materials that the German industry had shown recent progress. Such fields and uses included bleached beech sulphite for cellulose nitrate; special purified wood pulps as a substitute for cotton for other cellulose derivatives; yeast grown on the sugars in sulphite waste liquor; evaporating and burning sulphite waste liquor to avoid stream pollution; sulphite spinning paper as a substitute for kraft paper and sisal; hard fiberboard from fiberized wood waste; and a small number of pulp and paper products used as substitutes for critical materials such as asbestos, rags, and glass.

Except possibly for the yeast and hard fiberboard developments, the newer products or processes were considered to be inferior to normal products or uneconomical in peace-time conditions in America. Paper products as such apparently did not play an outstanding part in the war outside of their important conventional uses.

New pulp and paper mill installations since 1938 in the area inspected included two beech pulp mills, three hard fiberboard mills, one paper machine, and several auxiliary pieces of equipment. These installations were of high quality and modern design, but conventional. The Finkh pulp screen was believed to be the newest equipment development proven by use. A few new designs, such as the Shongau jet barker, the Scheufelen filter, and the Brecht stock inlet, were in process of development, although not proven.

Institutional and mill research appeared to be along ordinary lines of improving the quality and utilization of pulp and paper products. The development of wet strength and protection papers, for example, had been undertaken, but it is believed that no great progress had been made. Some research was done on finding substitutes for wood filters and on tropical woods.

The purpose of the investigation, which was conducted within the American, British, and French occupation zones, was to ascertain the status of the pulp and paper industry in Germany. Particular regard was paid to the production of pulp for nitration and other chemical purposes, utilization of sulphite waste liquor, manufacture of paper and paper product specialties, and pulp and paper research. Mills representing major phases of the industry were visited and individuals qualified in special aspects of the trade were interviewed. Details of manufacturing procedures used in the many branches of the industry were obtained whenever possible, even though they may have represented conventional German practices.

The German pulp and paper industry was found in general to have been less advanced than the same industry elsewhere. In many branches of the industry normal German technology was, in fact, backward. It was only in the development of technologies for certain normally submarginal fields to meet wartime expedients or in the use of pulp and paper products as substitutes for critical materials that the German industry had shown any recent developments. Such fields and uses included bleached beech sulphite pulp for cellulose nitrate; special purified wood pulps as a substitute for cotton for other cellulose derivatives; yeast grown on the sugars in sulphite waste liquor; evaporating and burning sulphite waste liquor to avoid stream pollution; sulphite spin paper for binder twine as a substitute for sulphate paper and sisal; hardboard from fiberized wood wastes for use in house construction; and a relatively small number of pulp and paper products as substitutes for critical materials like asbestos, rags, and glass. Paper products as such apparently did not play an outstanding part in the war outside of their important conventional uses. Except possibly for the yeast and hard fiberboard, the products developed were, for the most part, found to be inferior to normal products or the processes by which they were made to be uneconomical in peace-time conditions, especially for application in America.

New pulp and papermill installations since 1938 in the area visited, which included two beech pulp mills, several hard fiberboard mills, two paper machines, and a number of auxiliary pieces of equipment, were found to be of high quality and modern design, but conventional. The Finkh pulp screen was believed to be the most important equipment development proven by use. Normal development and installation of equipment were undoubtedly curtailed by the limited

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amount of materials of construction allotted to the paper industry. Nevertheless, a few new designs in equipment, such as the Shongau jet-barker, the Scheufelen filter, and the Brecht-Darmstadt stock inlet, were in process of development, although not proved.

Institutional and mill research was found to be directed mainly toward improving the quality of pulp and paper products, toward better utilization of these products, and toward finding substitutes for wood fibers themselves. The development of protective papers, for example, had received considerable attention, but this field was not believed to be very advanced.

Because of the minimum of new developments found in the German pulp and paper industry, a considerable portion of the investigation was devoted to finding out the manufacturing procedures actually employed in the various branches of the industry. These procedures differ in many respects from those used in America and it was believed that an exposition of them would be helpful to the American industry. The highlights observed in the different phases of the German pulp and paper industry were as follows:

General

Sulphite Pulping

Sulphite pulping practices were considerably less advanced in the mills visited than in most American mills. Wood barking was generally done by wasteful, knife-barking methods, although a few drum barkers were said to be used and a jet barker was under development. Chipping was done with old-style three- or four-knife chippers. The pulping was done by time-honored procedures with application of none of the more recent developments like the hot-acid system or the use of high pressure and strong acid. The digestion cycles were very long and abnormally low outputs were realized per digester. The pulp was universally discharged from the digesters by washing. Cooking control was entirely by hand. Except for minor changes in the temperature schedule for increased uniformity of pulping, the usual procedures for producing a soft pulp were applied to beech for ultimate usage as a chemical pulp. The use of the Finkh screen for both coarse and fine pulp screening was perhaps the most outstanding equipment application. The quality of sulphite pulp produced in Germany was understood not to have been exceptional.

Bleaching

Modern pulp bleaching procedures were used in only a relatively few mills, and the average level was below that elsewhere. The use of sodium hypochlorite in the final bleaching stage of pulps for chemical purposes was common. The quality of unpurified bleached beech sulphite pulp was apparently adequate for nitrating. A shortcoming of the pulp for use in viscose manufacture was its high fraction of short fibers, although its low resin content was a desirable characteristic.

Purified (High Alpha) Pulps

Purified wood pulps made by conventional purification methods or by the war-time developments of sulphate pulping preceded by hydrolysis of the wood and of nitric acid pulping apparently served as satisfactory substitutes for cotton for the manufacture of cellulose derivatives. The successful uses of nitric acid pulp for cellulose acetate and of the prehydrolyzed pulp in high strength rayon tire cords and cigarette paper were of particular interest, although neither pulping process is new in principle. It is doubtful, however, if either process could be operated successfully in an American economy.

Sulphite Waste Liquor Utilization

Utilization of the sugars in sulphite waste for alcohol production has been practiced in all German mills since World War I, although the economics are understood to be unfavorable. The development of the technology for yeast production when required by the use of beech is an important advancement in recent years, and this industry may possibly survive under normal conditions. Further, the technology developed may find some application in American mills. The utilization of byproducts from the evaporated liquor was on the same limited scale as before the war and no new uses have been developed. The evaporation and burning of sulphite waste liquor to prevent stream pollution received certain technological advances, but the problems were not all solved and the economics are very unfavorable.

Kraft Pulping and Bleaching

This industry is of minor importance in Germany and is conducted along older conventional lines. The product was regarded as only average. The prehydrolysis development is discussed under "Purified Pulps."

Groundwood Pulping and Brightening

This industry is apparently still conducted under the same relatively low temperature conditions which have characterized it for years. There was considerable interest in developing a high strength groundwood pulp in order to benefit from the high yield advantages of this process, but the development was not believed to have been put on a commercial basis. Steamed groundwood for use in boards has long been made in substantial quantities in Germany.

Paper and Paperboard

Except for the manufacture of newsprint paper on a few modern, high-speed news machines (not seen), German papermaking in the mills visited was characterized by low outputs on old, slow-speed machines with a minimum of control and regulating equipment. Beater processing of the pulp was used to a large extent and the skill of the operators played a very important part in producing the high grade specialty papers for which a few German mills had a considerable reputation. Although certain papers like crepe paper for nitrating, spin paper, and certain protective papers were developed during the war period, there did not appear to be an extensive application of paper for war-time uses.

Hard Fiberboard

The manufacture of a hardboard similar to Masonite (but believed inferior in quality) from defibrated wood was understood to have been a wartime development. Several small, well-designed and well-equipped mills were erected since 1938 to produce a board for construction, reputedly from wood waste. This development may possibly find application in America if the product can compete on a quality basis with similar boards now on the market and the process is proven to be economical.

Special Paper Products

Protective papers with wet strength or impervious qualities had apparently aroused considerable interest, but they were found to be used relatively little and they were still in the initial developmental stage. The need for protective papers for packaging was

very small in Germany in comparison with that in the United States. Waterproof papers were mostly conventional, although special treatments were reported, but not verified. Binder twine of an acceptable quality from sulphite paper was developed and used. The paper laminated plastic field was devoted entirely to the production of electrical insulation materials according to long-known methods.

Research

A certain amount of research was done to find substitute fibers for wood fibers and to make wood fibers stretch further, but no great application resulted as far as could be determined. Practical research was apparently conducted to a considerable extent to meet immediate needs, but no outstanding pieces of work were found.

Manufacturing Procedures

Although the German pulp and paper industry was found to be conducted according to methods of long standing with little evidence of changes, advances, or improvements, the procedures employed differed considerably from American practices. A general view of these practices is therefore given in the following paragraphs.

Sulphite Pulp for Chemical Purposes and Papermaking

The German sulphite pulp industry is a relatively large one, the normal productive capacity being 1,400,000 metric tons, or slightly over 50% of the total German pulp production and about 15% of the world's production of sulphite pulp. Approximately 84% of the German sulphite pulp is produced in the mills of the Waldhof, Aschaffenburger, and Feldmuhle concerns. The Waldhof concern produced 425,000 metric tons annually in their mills and was the largest individual pulp producer in Europe. The following discussion of the manufacturing procedures used in the German sulphite pulping industry is based on visits to three Waldhof mills, four Aschaffenburger mills, and six independent mills. (All of the Feldmuhle sulphite mills are located in Eastern Germany in Russian territory). Two of the mills visited, one at Ehingen and the other at Wildshausen, had been built since 1938 and the equipment and procedures used in these two mills probably illustrated the most modern German sulphite pulping practices. An excellent review of German pulp and papermaking practices is found in Mueller's book on the papermill and its machinery *(1)*.

In general there was little new or different in the German sulphite pulping industry in comparison with practices of 10 years ago. The manufacturing procedures and equipment differed somewhat, to be sure, from that used in America, but in no way could German pulping practice be considered to be advanced over the industry elsewhere. One of the most recent developments in the German sulphite pulping industry was the adaptation of standard procedures and equipment to the pulping of beech to produce a pulp for chemical conversion. This beech pulp proved to have qualities adequate for nitrates although apparently somewhat deficient for viscose.

A general description of the procedures and practices used in the German sulphite pulp industry as judged by the mills visited is given here.

Wood and Chip Preparation. A high percentage of the wood coming into the German chemical pulp mill apparently had its bark removed in the woods. Many mills did not have adequate provisions for barking the wood at the mill. During war-time this inadequacy, plus insufficient woods labor apparently presented a serious problem and improperly cleaned wood was said to have been used. The removal of bark in the mills investigated was almost universally done with knife barkers. Only one Thorne barking device was seen. It is understood that the newer mills in Eastern Germany make greater use of drum barkers of another type. It is also understood that there was considerable interest in improvement of barking machinery, presumably to reduce work losses. The Wagner-Dorries system featured a presoftening treatment followed by drum barking. The Shongau-Voith barker was reported to operate on a new idea involving a jet barking in a small chamber after the pulpwood had been given a softening pretreatment at 50 to 60°C. The small size of the barker would appear to limit its usefulness. It could not be determined whether any of these newer ideas had been accepted to any extent. The knife barkers were generally of older Bezner (Ravensburg) manufacture.

The latest Bezner machines were used in two mills. These barkers had disks 600 mm. in diameter fitted with eight knives operating in a horizontal plane. The logs were fed to the disk by rotating and feed gears on the feed table. The disk was raised or lowered by hand to bark each log. The machine handled logs up to 25 cm. diameter and its daily production was 70 to 90 "raum" meters per 8 hour shift. (A "raum" meter, abbreviated rm., is a unit of measurement for stacked or piled wood and is analagous to the American unit of a cord. A "raum" meter represents the wood contained in a normal pile having the dimensions of 1 × 1 × 1 meters. A "raum" meter of spruce, fir, or pine is considered in Germany to weigh 310 kg. dry or 390 kg. in the storage condition of 20% moisture content. A "raum" meter of beech weighs 380 kg. wet). In one mill the Bezners were followed by small vertical knife barkers for final cleaning of the logs. The total loss in removing the bark with both barkers in series was said to be 12%.

A special machine for barking beech wood had been developed by the Waldhof concern and built by Bezner. This machine was used in three mills inspected. The machine was made of two sets of three rotary disks operated on two shafts. The disks on each set were 80 cm. in diameter and 3 cm. wide and were separated from one another by a distance of slightly over 3 cm. There were five lugs or "knives" having a square cross section on each disk. The two sets of disks intermeshed about 5 cm. on the line joining their centers and rotated in opposite directions. The log was placed by means of a foot controlled support in the V formed at the top of the intermeshed disks and the bark removed by the rotating "knives." The logs were rotated by hand and when one half was barked the log was turned in mid-operation by means of the support to complete removal of the bark from the other half. The capacity of the barker was two "raum" meters per hour. The operation of the barker was not observed nor were any logs with bark removed seen. The operator's job was reported to be difficult physically. The Waldhof people were fairly enthusiastic about the operation of this barker, but the general opinion seemed to be somewhat unfavorable.

Knot borers were seen in one or two mills, but extra wood cleaning operations of this type were apparently uncommon, except when pulp of extra cleanliness was made. It was not ascertained whether the wood was stored before or after barking. Beech wood was understood to be split before storage in order

to prevent deterioration of the interior of the log.

The pulpwood with its bark removed was chipped in conventional three and four knife chippers with disks 2.5 to 3 meters in diameter. The chips commonly were conveyed by air to a cyclone for dust removal and then to the chip screens. A rotary brush chip cleaner was observed in one mill. Vibrating flat screens (Bezner and Miag, Braunschweig) predominated, although rotaries were used in Waldhof mills. The oversize chips were conveyed to a chip breaker of the hammer type and there to a secondary screen. In one mill a secondary breaker was used, all the product being accepted. In several mills the secondary screens were not used, the product from the breaker joining the accepted chips. At the Waldhof-Kelheim mill the breaker was not considered necessary for beech. In one mill chips 12 to 28 mm. in length were accepted. In another, the average value of 25 mm. was sought. The accepted chips were usually conveyed by air to the chip bin and the fines were burned.

Cooking Liquor Preparation. The sulphur dioxide gas was prepared by roasting pyrites in ovens or furnaces. The Lurgi oven appeared to be the one generally used. At Walsum a coke-oven byproduct ("gas-mass") was used as a sulphur source. In Germany pyrites are a much cheaper source of sulphur than the elemental material itself. Sulphur as such costs 100 reichsmarks per ton whereas the sulphur equivalent in 38% pyrites costs 40 reichsmarks per ton. The copper contained in the pyrites which was reputed to reach a maximum of 3%, was recovered from the roasted residue from several mills. The concentration of sulphur dioxide in the gas from the ovens was usually 6 to 8%, though 10 to 11% was achieved in the newer installations. The gas from the ovens passed to spray washers and then to ordinary lead pipe coolers, or, in modern plants, to heat exchangers. In one mill (Baienfurt) the cooled gas was passed through two Cottrell precipitators (made by Siemens and operated at 55,000 volts) in series for the purpose of removing sulphur trioxide and selenium compounds which were believed to be detrimental to the pulping operation and to reduce the sugar content of the waste liquor. In one mill the sulphur trioxide content of the burner gas was reported to be 0.3% and in another 0.19%. The cooled gas at 30 or 40°C. from the coolers then went to the acid towers for making the cooking liquor. The Lurgi system of acid making, or some close modification of it, was used in the mills visited. This system is similar in operation to the so-called Jensen tower system used in America. The German acid making towers, the identifying mark of a sulphite mill, were made of wood, were relatively tall and narrow, and built in banks of four, five, and six towers. Typical towers were 35 meters high and 2 to 2.5 meters in diameter. The limestone charged to the towers usually was obtained in the vicinity and was apparently a high chemical grade of calcium carbonate. The tower acid was then pumped to the acid recovery tanks for fortification by the gaseous relief from the digesters and thence to the acid storage tanks. In many of the mills ceramic-lined tanks were used for acid recovery and storage and in two or three mills ceramic lined steel storage tanks were used. The cooking acid or liquor in German mills had a total sulphur dioxide content of 3.8 to 6.4% and a combined sulphur dioxide content of 0.9 to 1.3% calculated as calcium oxide. The wide variation was due to the operation of the acid making plant and to particular requirements for the pulping operation, as indicated in the discussion on pulping later.

Pulping Equipment. Chip chargers were used in most of the mills. The Fresk and Svensson chargers were used to a greater extent than the Huntemueller. The digesters themselves had a larger diameter in relation to height than those used in America. A typical digester had a diameter of 7 meters and a height of 11 meters. This digester had a volume of 210 cubic meters and a pulp capacity of 18 metric tons. The size of the digesters varied considerably from mill to mill or within a mill. At Waldhof-Kelheim there were four digesters; each had a volume of 350 cubic meters and a pulp capacity of 24 metric tons. At Baienfurt, on the other hand, there were five old digesters whose total volume was only 305 cubic meters. At Waldhof-Mannheim there were fourteen digesters, each with a pulp capacity of 100 metric tons and four digesters, each with a pulp capacity of 20 metric tons. The digesters in one mill, Waldhof-Kostheim, were reported to be lined with carbon bricks from Siemens. The cement most commonly used for the linings was I. G. Farben's "Asplit."

Sulphite digesters made from V4A stainless steel plate 2.9 cm. thick are used at the Wolfen mill of I. G. Farbenindustrie. There are four digesters in the installation, each with a capacity of 250 cubic meters and equipped with indirect heaters and circulation. This installation is 9 years old. The Wolfen mill is in the Russian zone of occupation and was not investigated.

Less than 25% of the digesters were equipped for circulating and external indirect heating. The Schauffelburger circulating system was used on four 150 cubic meter digesters in the newest German pulp mill at Ehingen. In this system the liquor was taken from the digester through a strainer mounted about two-thirds up the digester. The liquor was pumped at a rate of 9 cubic meters per minute into both bottom and top of the digester. There were two liquor inlets at the bottom of the digester. At the Aschaffenburger-Stockstadt mill one out of seven digesters was equipped for circulation and indirect heating. The liquor turnover in the digester was 16 per hour. Only 40% of the heating was indirectly using steam at 2 atmospheres; the rest of the heating was done directly with steam at 6 atmospheres.

None of the mills was equipped for side relief. Automatic temperature controllers were not observed in any mills and an automatic pressure controller was seen in only the mill at Ehingen. The digesters were all equipped with the usual temperature and pressure indicators and in most mills temperature, pressure, and steam flow recorders were used. A number of mills were equipped with pulp samplers, but apparently the samplers were rarely used. All the digesters were equipped with a maximum pressure gage which sounded a warning when the safe working pressure was reached.

The relief gas was generally cooled in conventional lead pipe coolers. At the Kostheim plant the gas passed through special countercurrent, heat exchanger-type gas coolers in which the gas at 130°C. was cooled to 40 to 50°C. The exchanger was a very compact arrangement having a cooling surface of 200 square meters and used 1.5 cubic meters of cooling water per minute. At this same mill the waste liquor from the digester first passed through a flash boiler for recovery of sulphide dioxide and then to Rosenblad heat exchangers for heat recovery (hot water

for pulp washing) before going to the yeast plant. Rosenblad heat exchangers were also seen in other mills.

Valves, pipes, and fittings of stainless steel were used in all the mills visited. The steel was understood to be Krupp's V4A. None of the digesters were equipped for blowing, the German practice being to wash the pulp into pits or diffusers.

Pulping Procedures. The pulping procedures used in the different German mills were basically the same, but differed in details from mill to mill. The procedures used for producing beech pulps for chemical derivatives also differed somewhat from those used for producing papermaking pulps from spruce. The differences from mill to mill arose from differences in equipment and in requirements of the subsequent use of the pulp. The differences in pulping procedures used for spruce and beech arose from the differences in the two species themselves and in the character of the pulps from the two species. The main difference between German and American pulping practice in general was the use in German mills of long temperature schedules resulting from relatively slow temperature rises and long temperature equalizing periods and the practice of discharging the pulp by dumping or washing. These two time lengthening factors made the production per digester per day very low. At the Aschaffenburger-Walsum mill, for example, the average number of digestions per digester per month over a long period was 33. The difficulties of war-time operation, due to shortages of coal, wood, and labor, plus air-raid alarms (when the digesters were shut in) reduced even this number considerably. The normal digester to digester cycle for beech pulp at the Aschaffenburger-Stockstadt mill was approximately 20 hours. During the early part of 1945 this cycle was often as high as 87 hours.

In producing beech sulphite pulp the need for the highest possible degree of uniformity in pulping of each individual fiber in this relatively dense wood was reflected in the use of a temperature schedule which called for slow temperature rises and long temperature-equalizing periods. The temperature schedule used in most of the mills included (1) a rise to 105 or 110°C. in 4 to 5 hours, *(2)* a temperature equalizing period of 2 to 3 hours, (3) a rise to an intermediate temperature of 125 to 130°C. in 1.5 to 2 hours more, (4) a temperature equalizing period of 1 to 3 hours, (5) the third temperature rise to the maximum temperature of 135 to 140°C. in 1 to 2 hours, (6) the final cooking period at the maximum temperature for 3.5 to 5.5 hours, and (7) the gassing down period of 1 to 2 hours. The actual cooking time was 16 to 19 hours. The cycle from digestion to digestion also included chip charging—0.75 to 1.5 hours, liquor charging, 2 to 4 hours, and pulp washing and discharging, 1 to 3 hours; or a total time of 22 to 26 hours. A shorter cooking schedule was used, however, at Ehingen, probably because of the improving effect of liquor circulation on uniformity of pulping. Here, the temperature was raised to 113°C. in 4.5 hours, held there for 3 hours, raised from 113 to 134°C. in 3.25 hours more and held at this maximum temperature for 1.25 hours. The gassing down period was 1.25 hours and the total digestion time was 13.25 hours. The additional time for charging chips and liquor and discharging pulp and liquor gave a total cycle from digestion to digestion of 18.5 hours. The concentration of chemicals in the cooking liquor for beech pulp was generally 5 to 6% in total sulphur dioxide and 1.1 to 1.3% in sulphur dioxide combined with calcium oxide. The ratio of cooking liquor to wood was available at only a few mills; the value varied from 1.4 to 1.6 cubic meters per "raum" meter (approximately 0.45 to 0.50 gallons per pound). The maximum pressure used in the digesters ranged from 5 to 7 atmospheres. The pulps produced in this manner were characterized for degree of pulping according to different tests in different mills. A Roschier number range 150 to 190 was given by two mills. Another gave a Sieber number value of 18 to 20; one other gave a range of 20 to 28 for the same value; others, quoted Johnson-Noll values of 22 to 25. Although all these values indicated the pulps to be of the same general character and suitable for bleaching to chemical pulps according to conversion tables *(2)*, the chlorine actually required in bleaching varied from 3.5 to 7% as judged by the bleach plant data.

The pulping conditions used in producing papermaking pulps varied considerably from plant to plant and within a single plant depending on the quality or type of pulp being produced. However, the same basic pattern of a straight-rise temperature schedule was used in all the mills. This pattern covered the following range: a rise in 3 to 7 hours to a temperature of 105 to 120°C., a temperature equalizing period of 2 to 6 hours, a rise to a maximum temperature of 125 to 140°C., holding at the maximum temperature for 1 to 5 hours, and gassing down for 1 to 3 hours. The total cooking time varied from 11 to 22 hours. The times for charging the chips and cooking liquor and discharging the spent liquor were the same as enumerated above. The cooking liquor concentration was quite the same in most of the mills. The total sulphur dioxide concentration varied from 4.5 to 6% and the sulphur dioxide combined with calcium oxide ranged from 0.8 to 1.1%. The liquor-wood ratio was given at two mills as being approximately 1.5 cubic meters of liquor per "raum" meter of wood. (This converts to a 0.58 gallons per pound of spruce). The maximum digestion pressure was 5 to 7 atmospheres. The spruce pulps produced according to these procedures varied from hard, unbleachable pulps for newsprint or glassine to soft pulps for bleaching. The Roschier number range for these pulps was 20 (hard) to 100 (bleachable).

Cooking Control. Control of the degree of delignification and cellulose particle size in sulphite pulping in German mills was indirectly by liquor tests *(2)*. In all the mills visited the color of the cooking liquor was used as the primary gage for cooking control. In most mills a colorimeter like that of Zeiss was used to measure the color, although in some mills standard color samples were also used. The color of the liquor by instrument measurement was correlated with viscosity measurements on beech pulp for chemical use in several mills as means for controlling this pulp property. A secondary control measure was an iodine titration to measure the content of unconsumed calcium bisulphite in the liquor. This test was made periodically during the digestion and was usually conducted on a hot sample. In one mill the chloramine test was used for this purpose using a standard test method *(3)*. In another mill the specific gravity of the cooking liquor was used as a supplementary control. In this case the digesters were fitted with a device which permitted the cooking liquor to circulate through a tube containing a hydrometer. The liquor samples for the foregoing tests were generally taken at a point half way up the digester. Many of the

digesters were fitted with pulp sampling devices, but as far as is known, tests on pulps taken from digesters were not used for control. Considerable reliance appeared to be placed on the experience of the operator in determining the proper time to end a digestion.

Pulp Screening. The pulp from the pits or diffusers was pumped or conveyed to the screen room for removal of knots and other undesirable material by conventional screening methods. In several mills the pulp from the pits was sent to a rotary vacuum washer and thickener before screening. In most plants, especially the ones producing papermaking pulp, the pulp passed through rotary distintegrators (presumably needed because of the pulped chips that were not defibered in discharging by washing). The first step in screening in any case was removal of knots. The rotary knotter was the most common for this purpose. In one mill, instead of the rotary knotter, a Wagner flat vibrating knot screen was used. In another, a Finkh screen (Hermann Finkh, Reutlingen) was used. The Finkh screen was apparently a more recent development in Germany and was said to be based on Swedish patents. It was very highly thought of in the mills where it was used and it was judged to be a definite advancement in the equipment field. It found usage mainly as a knotter type of screen but was reported to be very successful for removing fine material following bleaching and ahead of the pulp drying machine. This is a small screen approximately 1 meter by 1.5 meters in size. The screen plate was somewhat dished and was suspended from the screen frame. The screen was given a vibrating and forward motion which forced the desired stock through the screen holes and pushed the rejects across the length of the screen and over the high portion of the plate.

The pulp from the knotters generally passed to rifflers and either directly to flat diaphragm screens or to primary and secondary rotary screens in series. In some instances the pulp from the secondary rotaries also was screened over flat diaphragm screens. The screened pulp then passed to the thickener before going to the bleach plant or, for unbleached pulps, to the pulp drier. The primary rotary screens generally had holes 1.0 mm. in diameter for beech and 1.8 mm. for spruce pulps. The secondary rotaries had holes with diameters of 0.8 and 1.4 mm. for beech and spruce pulps, respectively. The flat screens had slot widths varying from 0.12 to 0.15 mm. for beech and 0.15 to 0.18 mm. for spruce pulps. At the Aschaffenburger-Stockstadt mill, which had a favorable reputation for clean pulp, the pulp from the bleach plant was screened through a bank of rotary screens with 0.15 mm. holes. At this mill considerable care was also taken in cleaning the wood. The Finkh screen was considered at Ehingen to be very effective for final cleaning of the pulp.

Pulp Bleaching. The bleaching of sulphite pulp is discussed in the next section.

Pulp Drying. The drying of bleached or unbleached pulp for shipment was generally done on fourdrinier type machines. In the mills producing beech pulp for chemical use considerable care was taken in drying the pulp after forming the sheet in order not to destroy the reactivity of the pulp in subsequent chemical operations. In the new mills at Ehingen and Wildshausen modern conventional fourdrinier type machines were used. A vacuum couch roll and a rubber top couch roll were used. The pulp leaving the press section had a moisture content of 55%. The pulp leaving the drier part had a moisture content of 35% and the rest of the drying to a moisture content of 10% was done in a Haas drier (hot air in a large chamber with the pulp web passing back and forth on a horizontal plane). A vacuum drier was used at the Aschaffenburger-Stockstadt mill. In this case the pulp web from the drier part had a moisture content of 50%. The web then entered a conventional drier operated under a vacuum. The temperature in the vacuum drier was reported to not exceed 92°C.

Bleaching of Sulphite Pulp

Sulphite pulp is bleached to make it satisfactory with respect to brightness for papermaking or to make it suitable (for example, lignin-free, low ash, low resins, etc.), for conversion into chemical derivatives like viscose and nitrates. The procedures for both types are, in general, similar in principle, although the chemical pulp requirements are more exacting and hence usually require more complicated procedures. Special procedures are employed for producing specially purified sulphite pulp suitable for conversion to acetates or cuprammonium rayon, and these procedures are discussed in the section on "Purified (High Alpha) Pulp." The bleaching methods used in Germany fall into the same general plan as in any other pulp-producing country. Modern German pulp bleaching practice is described in various reference books *(1, 4)*. In some mills the bleaching of pulp for paper was still done by single-stage hypochlorite bleaching in a Hollander. Two-stage chlorination-hypochlorite bleaching in a Hollander or Bellmer was employed in the mills, wanting to modernize older equipment. The modern two or multiple-stage procedures employing a tower for the chlorination stage were employed in a relatively few mills and usually for bleaching the beech sulphite pulp produced in recent years in Germany for viscose and nitrates. Sodium hypochlorite instead of calcium was used in producing the highest quality chemical pulps. Pulp bleaching methods in Germany as a whole appeared to be backward and only a relatively few modern plants were observed.

Bleaching Pulps for Papermaking. A single-stage hypochlorite method was employed in a mill producing a cardboard with a bleached sulphite liner. The unbleached spruce sulphite pulp had a chlorine requirement of 5%. The bleaching was carried out in large (175 cubic meter) tile-lined Hollander bleachers. The consistency during bleaching was 8% and the bleaching time was 8 hours. No antichlor was used, but the bleached pulp was thoroughly washed with warm and cold water on a fourdrinier-type pulp drying machine.

A two-stage chlorine-hypochlorite method in which all the bleaching was performed in a Hollander or Bellmer-type of bleacher was in considerable favor for producing bleached papermaking pulp and also for the bleaching of purified pulp. In one mill making fine papers, market spruce sulphite pulp having a chlorine requirement of 4 to 6% was bleached in a tile-lined Hollander-type bleacher (40 cubic meters capacity) built with a narrow chamber parallel to the length of the bleacher for the purpose of adding chlorine water to the pulp circulating between this chamber and the main body of the bleacher without having the chlorine come in contact with moving parts. This construction, or some variation, was understood to be employed in several mills. In a typical bleaching operation the chlorine for the first stage was metered through a "Rota-meter" and added

in a Pennsalt-type of injector at 60 to 80 grams per liter. The chlorine requirement of the pulp was 4% and three-fourths of this, or 3%, was added in the first stage. The chlorination took 2 hours total time, but was interrupted after 1 hour for addition of calcium hydroxide to neutrality (10 minutes required), following which the chlorination was continued for an additional 50 minutes. The chlorination was followed by a 2 hour wash and then sodium hydroxide added to pH of 9 (0.5 to 1% of pulp). The neutralizing step (not considered a stage) was followed by a warm water wash (30 to 40°C.) until the water was clear. The second stage of bleaching was accomplished with calcium hypochlorite. A 50 grams per liter solution was used for a chlorine equivalent of 0.5 to 1.25% of the pulp. The second stage took 1 to 1.5 hours and the temperature was 25 to 27°C. The pulp was then washed free from chlorine with warm water. The consistency throughout the bleaching was approximately 4.5%. The total bleaching time was approximately 9 hours.

In another mill spruce pulp was given a first stage hypochlorite bleach in a Thorne tower at high density, 12%. The pulp used had a chlorine requirement of 5 to 6% (Johnson-Noll number of 20) and 50 to 55% of this was added in the first stage, which was conducted at 30°C. The pulp was then washed on a vacuum cylinder washer (Zellenfilter). The second stage bleaching was done in a large tile-lined, Hollander-type bleacher at 7% consistency and 40°C. The remainder of the chlorine requirement, 45 to 50%, was satisfied in this stage. The pulp was, of course, washed again on the filter following this stage.

Bleaching Pulps for Nitrate and Viscose Industries. During recent years the pulps used for nitrating were made predominantly from beech wood. Beech pulps were apparently used to a lesser extent for viscose. The most satisfactory pulp composition for nitrating was a combination of 70% bleached beech and 30% bleached spruce. Information on bleaching spruce was obtained at only one mill. The procedure followed was the same as the two-stage hypochlorite bleach for paper pulp described in the previous paragraph, except that the pulp was given a caustic extraction stage at 35°C. using 1.5% sodium hydroxide based on the pulp. The resultant pulp had an alpha content of 89% and a solubility in 5% caustic soda (20°C.) of 4.5%.

The procedures for bleaching beech sulphite pulp for viscose or nitrates varied considerably in form and details from mill to mill, but not especially in principle. In one mill the beech pulp had a chlorine requirement of 4 to 5% and was bleached according to a simple three-stage procedure in a Bellmer-type bleacher. The stages were chlorination, high density (12%) caustic extraction, and hypochlorite.

The unbleached beech pulp at another mill had a chlorine requirement of 7 to 8% (Johnson-Noll number of 25) and an alpha-cellulose content of 89%. The first stage was chlorination at 2% consistency and 35 to 40°C., in a small tower, applying 35 to 50% of the total chlorine requirement. The pulp was then washed on a rotary vacuum filter and the rest of the bleaching done in a Hollander-type bleacher with hypochlorite. The consistency was 7% and the temperature 40°C. The bleached pulp had an alpha content of 89 to 91% and a viscosity of 300 to 340 millipoises.

Another two-stage tower system was used at a mill starting with unbleached beech sulphite having chlorine requirement of 3.5%. The first stage was done continuously in a rubber-lined vertical iron tower of 50 cubic meters capacity and equipped with a stirrer. The pulp and chlorine water (in amount of 1.5% on pulp) were mixed in a small mixer with a horizontal rotating shaft with blades and then forced directly into the top of the tower. The pulp at a consistence of 3 to 4% passed through the tower in 25 minutes and proceeded to a rotary vacuum filter for washing. The pulp was then neutralized with sodium hydroxide (consumption very low) and pumped to large Hollander bleachers (15 metric tons pulp capacity equivalent to one digester), where sodium hypochlorite (at 15 grams per liter) equivalent to 2% chlorine was added, the consistency being 6 to 8%. The bleached pulp then passed to washers and thickeners. The pulp characteristics were as follows: alpha-cellulose, 88.3 to 90.4%; solubility in 5% caustic soda, 3.8 to 5.9%; copper number, 1.9 to 2.3%; ash, 0.11 to 0.35%.

A more complicated three-stage system modelled after that of Voith was used for an unbleached beech pulp having a total chlorine requirement of 3 to 4% and a viscosity varying widely from 248 to 389 millipoises. For the first stage, chlorine water and pulp were mixed in a small screw mixer and conveyed directly into two towers in series, for a batch chlorination. The chlorine consumption was 50% of the total. The temperature was 30 to 35°C., and the time was 2 to 4 hours. The pulp from the two tanks next passed to a mixer-blender and then to a washer-thickener with rubber rolls and accessories. The pulp after the thickener was at 7 to 8% consistency and had a pH of 4 to 5. The pulp was then mixed with calcium hypochlorite in another screw mixer and conveyed into two towers operated in parallel. In this stage 20 to 30% of the total chlorine was consumed and the temperature was 40°C. Blending in another mixer and washing on cylinder washers completed this stage. The third stage was conducted in large, tile-lined Bellmer type bleachers, having a capacity of 18 tons of pulp. In this last stage the remainder of the bleach in the form of hypochlorite was added. This stage took 10 hours and was completed by a wash with sulphur dioxide water (0.5%) to reduce ash and act as an antichlor. During the last stage, control viscosity tests (I. G. Farben method) were run. The bleached pulp had the following range of characteristics: alpha-cellulose, 89.2 to 90.3%; wood gums (hemicelluloses), 4.4 to 5.7%; cuprammonium viscosity, 192 to 250 cp; xanthate viscosity, 18.0 to 23.0; ash, 0.11 to .15%; iron content, 0.8 to 1.3 mg; manganese, 0.06 to 0.08%.

A feature of a bleaching system in one mill was a special chlorinator. This consisted of a series of U tubes for continuous bleaching. Each leg of a U tube had a capacity of 4 cubic meters and the pulp passed through five legs or small towers in 6 to 10 minutes with an average production rate of 3 tons per hour. The pulp had a total chlorine requirement of 6%, and 3% was added in the first stage. The chlorine water and pulp were added in an injector arrangement and the consistency was 2 to 3%. The pulp from the chlorinator was pumped to a cylinder washer-thickener from which the pulp came at 10 to 14% consistency. The pulp was then neutralized at this consistency with sodium hydroxide (0.5% used) and passed to a tower for the second stage sodium hypochlorite bleaching. The towers or tanks were tile lined and had a capacity of 200 cubic meters. The equivalent of 2% chlorine was used and the consistency was 15%. The pulp was then pumped to a

Hollander-type bleacher (120 cubic meter capacity) for a second sodium hypochlorite bleaching. This bleaching took 1 to 2 hours and the hypochlorite solution was added at 20 grams per liter in an amount equivalent to 1% chlorine on the pulp. Following this hypochlorite bleach, the pulp was washed with bisulphite liquor (0.7% and 0.5 hour), hydrochloric acid (2 to 3% concentration—0.25 to 0.5% on pulp—for 0.5 hour at pH 3 to 4) and washed for 3 hours. The resulting pulp had an alpha-cellulose content of 89 to 90%, a copper number of 1.6 to 1.9%, an ash content of 0.1 to 0.15%, a wood gum content of 4.5 to 5.5%, a resin content of 0.4 to 0.5% and a cuprammonium viscosity of 220 to 270 millipoises.

Yield and Quality of Bleached Beech Sulphite Pulp. A bleached pulp yield of 43% of the wood was reported by one mill. A number of producers of bleached beech sulphite pulp claimed it to be superior to spruce pulps for nitrating and xanthating. The overall evidence seemed to indicate that beech pulp was adequate in quality for nitrating, but certainly not superior to spruce. As a matter of fact, certain difficulties were reported in handling the beech, and, as already mentioned, it was found necessary to use at least 30% spruce pulp with the beech pulp. The manufacture of viscose from beech sulphite pulp was evidently more difficult than the general reports indicated and spruce pulp from Sweden and Germany was used to the extent of its availability. A particularly undesirable characteristic in the beech pulp was its high fraction of short fibers. This slowed down normal viscose mill operations. Analyses of a number of bleached beech sulphite pulps obtained during and after the war indicated that the actual alpha-cellulose content of the pulp was more like 87 to 88% than the 89 to 91% reported by the mills visited *(5)*.

Staple Fiber From Wood Pulp. This industry is reported elsewhere *(6)*.

Purified (High Alpha) Pulps

During recent years the production from wood as a raw material of purified pulp with a high alpha-cellulose content and more suitable for the more exacting chemical derivatives, like the acetates, has been increasing. In 1944 it is estimated that the daily productive capacity was roughly 150 tons of wood pulp having an alpha-cellulose content in excess of 94%. In addition there has been great interest in the development of methods for producing the purified pulp. The considerable activity in this field can doubtless be attributed to the loss of cottton as a raw material and the need for large amounts of these pulps to satisfy war needs.

Procedure Used by Temming. The firm of Peter Temming has beeen a longtime producer of high alpha pulps for acetates using cotton as the raw material. The procedures developed for cotton were applied fairly successfully to unbleached and bleached pulps (mostly bleached pulps from German mills). The bleached and unbleached pulps were purified by a simple caustic extraction in steel globe rotaries with 3% sodium hydroxide (pulp basis) at 3 atmospheres pressure for 6 to 8 hours. The time depends on the customers' viscosity specifications for the purified and bleached pulp. In the case of unbleached pulps the caustic extraction was followed by bleaching in the tile-lined Hollander bleachers (2500 kg. capacity) according to the conventional two-stage chlorine-hypochlorite procedure described in the section on "Bleaching of Sulphite Pulp." In the first stage, chlorine gas in the amount of 40% of the chlorine requirement of the pulp was added through a conventional mixer (Pennsalt-type) to the pulp suspension in auxiliary chamber built on to the Hollander and through which the pulp circulates. This stage was conducted at room temperature and 4 to 6% consistency and took 1 to 4 hours time. The pulp was then washed in the Hollander (1.5 to 2 hours). The bleaching was completed in the second stage with hypochlorite, (probably sodium salt) the operation taking approximately 1 hour. The final washing takes 2 hours. The total bleaching cycle was 9 to 10 hours. The pulp was said to be characterized entirely by its viscosity, which varied from 20 to 100° Ost, depending on purchaser's requirements. The pulp was reported by Wacker to have inadequate brightness for cetate films but satisfactory for fibers.

"Alphalint" Procedure. Unbleached sulphite pulp was purified and bleached when necessary at two plants of the Alphalint Co., one at Peschelmuhle, and the second at Wildshausen. The procedures followed were said to be basically the same at both plants. The tormer purchased bleached sulphite pulp (believed to be spruce) from Aschaffenburger, whereas the latter used beech sulphite pulp produced at the Wildshausen plant. The unbleached pulp at Wildshausen had a permanganate number of 20 to 25, a Roschier number of 150 to 200 and a viscosity of 350 to 400 millipoises and an alpha-cellulose content of 89 to 90%. The purification was carried out in spherical rotary cookers of 30 cubic meter capacity. The pulp was treated with 8% sodium hydroxide and 1% sodium carbonate for 3 hours at 150°C. The consistency at the start of the purification was approximately 14%. The pulp after the purification treatment had an alpha-cellulose content of 95 to 96% and a viscosity of 500 millipoises. The pulp was then bleached in tile-lined Hollander-type bleachers (220 cubic meter capacity) according to a two-stage process. In the first stage sodium hypochlorite was added to the bleacher at 70 grams per liter and in the amount equivalent to 1.5% of chlorine on the pulp. The consistency during this stage was 6% and the temperature was 35°C. The pulp was then washed in the bleacher. Sodium hypochlorite was also the bleaching agent in the second stage, this time with a chlorine equivalent of 0.5 to 1.0%. The temperature was 45°C. The pulp was washed again and finally given an acid wash comprising treatment with hydrochloric acid in the amount of 1.5 to 2.0% on the pulp The pulp thus produced had an alpha-cellulose content of 95 to 96%, an ash content of 0.1 to 0.2%, a solubility in 5% caustic soda of 1.1 to 1.5% and a viscosity of 270 to 300. The yield of purified pulp was reported to be 35% on the basis of the wood. Bemberg at Wuppertal and I.G. Farbenindustrie at Dormagen were consumers of the Wildshausen Alphalint pulp.

Waldhof Prehydrolyzed Procedure. A war-time development at the Johannesmuhle plant of Waldhof was the procedure featured by a water hydrolysis of wood chips followed by conventional sulphate pulping and bleaching processes (similar to the process already developed by the Brown Co. in America). The prehydrolysis stage took place in the ordinary sulphate pulping digesters and was conducted at 140°C. (4 to 5 atmospheres) for 0.5 to 2 hours. The total cycle took 2 to 3 hours. The pH at the end of the extraction was 3.8, but it was claimed that there was no corrosion of the steel digesters. The wood used was pine and the extraction removed 6 to 8% of hemicellulosic material. The chips after the pre-

hydrolysis were pulped according to the sulphate process and the pulp bleached according to the bleaching process outlined in the section on "Kraft Pulp." The pulp was produced with a yield of 38% of the wood and had an alpha-cellulose content of 94% (the goal of Waldhof was 96%) and was characterized by a very low mannan content and a soft, fluffy nature. The annual production of 6,000 tons was divided into 3,500 tons for viscose, especially for rayon tire cords, and 2,500 tons for cigarette paper and artificial leather. It was believed that the pulp was promising for cellulose acetate but apparently this application had not passed the experimental stage. The liquor extract from the prehydrolysis was fairly rich in sugars which could be used for yeast growth. This extract was also reported to be suitable for the growth of penicillin.

Refined pulp was also made by treating bleached pulp (not prehydrolyzed) with "white" cooking liquor in the ratio of 1 to 8 for 1 hour at room temperature. The extracted pulp was then washed on imperial filters. This pulp had an alpha-cellulose content of 98% and was supplied only to Glanzstoff.

Phrix Procedure. Another prehydrolysis process was that proposed by Phrix. The application of the Phrix process to wood was based on more or less satisfactory experiments with straw. Two sulphate mills (at Kustrin and Hirschberg) were reported to have been ready to produce pulp by this process shortly before the end of the war, but actually did not get into production. In the Phrix process pine wood chips are subjected to a rather severe acid hydrolysis treatment and then pulped (sulphate) and bleached by conventional methods. The hydrolysis step was carried out in a stone-lined digester (125 cubic meter capacity). The agent used was 0.3% sulphuric acid and the liquid-wood ratio was 4.5 to 1. The hydrolysis was conducted at 125°C. (4 atmospheres) for 2 to 3 hours. Approximately 19% of the wood was extracted by this treatment. Reducing substances account for 18 out of the 19%. It was proposed to utilize these sugars for yeast growth *(7)*. The hydrolyzed chips were pulped by the sulphate process and the pulp subsequently bleached according to procedures discussed in the section on "Kraft pulping." The bleached pulp was reported to have an alpha-cellulose content of 92 to 94% and to be produced in a yield of 32% of the original wood, but its other characteristics were not known. It is possible that the probable use of this pulp in the Zellwolle plants of Phrix would not require it to meet rigid specifications.

Nitric Acid Procedure. One German plant, the I.G. Farbenindustrie plant at Wolfen, produced a beech wood pulp of high purity and suitability for cellulose acetate by the use of the nitric acid pulping process *(6, 8)*. The cost of producing this pulp was understood to be very high.

Procedure at I.G. Farbenindustrie. The supply of purified beech wood pulp obtained by the I.G. Farbenindustrie Dormagen plant was apparently insufficient to meet the plant's needs and bleached beech sulphite pulp was purified there. Two processes were used *(9)*, (a) hot extraction with 2.5% sodium hydroxide at 90°C., and (b) cold extraction with 10% sodium hydroxide for 1 hour in twenty times the weight of the pulp, followed by addition of more caustic to 1% of the pulp and then filtering and washing. The cold extracted pulp had an alpha-cellulose content of 96%, an ash of 0.25%, a xylane content of 1.76% and its yield was 85%. The hot extracted pulp had an alpha-cellulose of 94.5%, an ash of 0.22%, a xylan content of 1.84%, and its yield was 75%.

Cost and Quality of Purified Pulp. Relative cost values for the pulps were given as follows: for 100 kilograms of pulp unpurified, bleached beech sulphite for nitrating or viscose, 32 to 35 marks; prehydrolized sulphate pulp, 43 to 48 marks; purified sulphate pulp, 51 marks; Alphalint purified pulp, 74 marks.

According to Wacker of Burghausen, the purified pulp being supplied them from Peschelmuhle and from Temming had the following analysis: alpha-cellulose, 96.3%; ash, 0.15%; viscosity, 340 millipoises; resins, 0.1%; degree of polymerization, 800. Wacker considered nitric acid pulp and cotton to be the only pulps suitable for acetate films. It was claimed that cellulose acetate from spruce was darker than from beech due to higher resin content in the spruce. The general impression gained was that the industry would return to cotton when this commodity became available.

Sulphite Waste Liquor Utilization

The waste liquor from the sulphite pulping process contains approximately one-half of the original wood; the other half, of course, is the pulp itself. Thus, the amount of material in the waste liquor is roughly equivalent to the amount of sulphite pulp produced, or 1,400,000 metric tons annually in years of normal German pulp production. A part of this vast source of organic material has been utilized for many years in Germany. This part includes, for one thing, the fermentable sugars which have been fermented to ethyl alcohol or used as a nutrient for growing yeast. Another part has been utilized, after suitable processing, in the form of a dried powder or viscous liquid as a tanning agent, and as a core binder in foundry practice. There are also other minor uses. A potential use, now exploited in a small way, is the simple burning of the organic material for its fuel value, after removing, by evaporation, the water dissolving it. In spite of these uses of sulphite waste liquor, in Germany, roughly two-thirds of the organic material is still unused. In America, this fraction closely approaches unity.

The problem of the utilization of sulphite waste liquor, and it is a problem as yet unsolved, has arisen through a desire (a) to make use of this rich source of organic material for reasons of the potential values contained therein as well as for reasons of conservation of resources and, (b) to avoid contaminating or polluting the watercourses into which the waste liquor is discharged, even at the expense of not realizing the potential benefits under (a).

The situation regarding the utilization of sulphite waste liquor in Germany appears to be somewhat as follows, as based on interviews with leaders in the pulp and paper industry. The problem of stream pollution is apparently not as serious as in America at present. To be sure, it is a problem at a few mills, through reason of unwise selection of the mill site (for example on a very small stream or on a stream supplying water for urban use) or through expansion considerably over the original plans. The general opinion seems to be that for most German sulphite pulp mills waste liquor disposal as such is no problem. The problem of the recovery of the values contained in the waste liquor, on the other hand, is not so simple. During or shortly after World War I, a serious shortage of fuel led to the development of the process of converting the fermentable sugars in the waste liquor (2 to 3% of total weight) into ethyl alcohol.

This way of utilizing a part of the organic material in the waste liquor has been pursued successfully from a technological standpoint for the annual production of 18,000,000 gallons of alcohol. Under peacetime economic conditions, however, the industry apparently has to be subsidized by the government.

In 1936 a new phase in the use of the fermentable sugars was introduced. Up to this time spruce had been the main wood species used for sulphite pulping. Wood economics made it necessary to utilize considerable proportions of beech wood. The waste liquor from beech wood was found, however, to be unsuitable for production of alcohol because the sugars are different chemically (namely, pentoses instead of hexoses) and were not readily converted or fermented to alcohol. Unwillingness to lose this source of sugars plus the need to supplement the protein supply of the nation led to the technological development of the utilization of the fermentable sugars in beech sulphite waste liquor for the growth of yeast. (Methods were known previously but not applied on a commercial scale). The yeast thus made was used mostly for animal (particularly war horses) fodder, but partly for human consumption. (Spruce sulphite waste liquors can also be successfully utilized for yeast growth). This development, one which received its start through wartime conditions and needs in Germany, is believed by many to be economically possible in peacetime. (Utilization of the fermentable sugars in the waste liquor, it should be pointed out, does not reduce entirely the total pollutional character of the liquor). The utilization of the solid material in the waste liquor for tanning agents or as adhesives has been successful for many years in several mills, the fermentable sugar being utilized first. However, some eight or ten mills out of the approximately fifty German mills have been able to satisfy the market. Some expansion is expected, but not enough to affect the sulphite industry as a whole. The utilization of the organic materials in the waste liquor for their fuel value has been tried in two German mills and one Austrian mill faced with a stream pollution problem. Although the technologies have not been completely worked out as yet, there is little doubt that they can be. The economics of this outlet for sulphite waste liquor do not appear, on the other hand, to be very favorable. The heat value recovered has not defrayed the expense of evaporating and burning the organic materials in the mills inspected. Utilization of the sugars for yeast or alcohol decreases, of course, the ultimate heat value of the liquor.

Thus, it would appear that the values locked in the organic materials contained in sulphite waste liquor will continue to be lost for the most part until new methods are found to release them. The partial recovery of these values is, however, in a well advanced stage in Germany and details of the procedures used in obtaining these values are outlined in the following paragraphs.

Collecting the Waste Liquor. The collection of the waste liquor from the pulping operation with the highest possible concentration of solids is obviously important when the liquor is to be fermented and is particularly important when the liquor is to be evaporated. Further, the collection of essentially all the waste liquor is a necessity when a stream pollution is involved. Several schemes for collecting the waste are used. For example, at the Aschaffenburger Walsum mill, which produced concentrated liquors for the tanning and foundry core-binding industries as well as alcohol from the fermented sugars, out of 190 cubic meters of cooking acid charged to a digester plus approximately 10 cubic meters of water in the chips (indirect heating—no steam condensation) 94 cubic meters of waste liquor were withdrawn directly from the digester at the end of the digestion and sent to the alcohol plant. This liquor had a density of 7 to 8° Bé. for spruce and 8 to 10° Bé. for beech. In addition, 35 cubic meters of primary wash water or wash water having a minimum density of 6° Bé., whichever may be controlling, were also sent to the alcohol plant. The wash water of lower concentration was used for primary washing of the pulp from the next digestion.

At the Alphalint plant at Wildshausen, where stream pollution is a problem because of the Ruhr River being used for domestic water, and where concentrated liquor was produced for both burning and byproducts, 70 cubic meters of waste liquor were taken directly from the digester and sent to the yeast plant. Another 110 cubic meters of primary wash water from washing the pulp in the digester were also sent to the yeast plant. These 110 cubic meters of waste water were originally added as fresh water ahead of the rotary pulp washer and had proceeded counter current to the pulp flow through two diffusers in series before addition to the digester for the first pulp washing. In this scheme only fresh water was added to the system to replace the wash water going to the yeast plant.

At the Schwabische Zellstoff plant at Ehingen a similar scheme was practiced. In this case only 10% of the organic matter in the waste liquor was said to be permitted to be sent to the Danube River. This was controlled by a permanganate test. Out of 105 cubic meters of acid charged to the digester plus the water in the chips, 60 cubic meters were drained directly from the digester and sent to the neutralizing tank prior to evaporation and burning. Another 80 cubic meters of wash water were also sent to the neutralizers. This wash water had as its source the primary diffusers into which the pulp from the digesters was washed after the cooking liquor had been drained off. Through the scheme of counter current pulp washing used in this mill the fresh water was used in four washings before finding its way to the neutralizing tanks and thence to the evaporators. The liquor sent to the evaporators was said to contain 12.5% solids. (Although the sugars had not been removed by fermentation, the solids value quoted is believed to be too optimistic).

In a plant producing alcohol the waste liquor and washings were said to be simply taken to a density of 1° Bé (although this gravity is doubted and believed to be too low for economic fermentation). In another, the waste liquor plus wash water had a total solids of 8%.

Alcohol and Yeast. The sulphite waste liquor taken directly from the digester and the primary wash waters collected as just indicated are pumped to the alcohol and yeast plants. Here, the liquor is neutralized and then the fermentable sugars are converted into ethyl alcohol or used to grow yeast or molds *(7)*.

Evaporation. The residual liquor from the alcohol or yeast plant in mills practicing evaporation had a total solids content of 6 to 10% with 8% rarely exceeded. Before these solids (mostly calcium lignosulfonate plus nonfermentable sugars) can be used either for their chemical or for their fuel value, it is necessary to concentrate the relatively dilute solution to approximately 50% solids (total) for most

purposes. In the eight mills evaporating waste liquor in Germany this was done in conventional multiple-effect vacuum evaporators. An Austrian mill (Lenzinger Zellstoff A.G.) used the Ramen process for evaporating the sulphite waste liquor. This latter process is discussed later in this section.

Quadruple or quintuple effect evaporation was employed. Lurgi evaporators appeared to be generally used. In a typical case the residual liquor from the yeast plant had a total solids content of 10% (8° Bé). The fresh steam was introduced at 1.8 atmospheres (120°C.) and in the final effect the temperature was 55°C. and the vacuum was 65 centimeters. The final liquor had a total solids content of 52% (36° Bé). In one newer plant (Ehingen) copper tubes were employed, but stainless steel was preferred. In this same plant considerable trouble was experienced with lining or scaling of the tubes, and two parallel sets of evaporators were used alternately. At three other plants visited (Wildshausen, Mannheim, and Walsum) no particular difficulty was reported. It is believed that the residual liquors from the alcohol or yeast plants will possibly give less liming troubles than the waste liquors not so treated. (The Ehingen plant did not have its yeast plant completed). A proprietory compound called "Antikalcit" was reported to be fairly efficacious in removing scale from the tubes *(10)*.

Burning Concentrated Sulphite Waste Liquor. Two German mills (Ehingen and Wildshausen) and one Austrian (Lenzing) mill burned the concentrated waste liquor. The Austrian mill operated according to the Ramen process described later. In the two German mills the concentrated waste liquor from the evaporators at approximately 50% total solids was heated by steam in an auxiliary tank to a temperature corresponding to 1 to 3 atmospheres. The heated liquor was then sprayed through nozzles into a furnace. Since the heat value of the solids was not sufficient to supply the total steam requirements of the mill, even when all the waste liquor was processed (which was not always the case), powdered coal was added through separate nozzles at the same time. The heat value of the liquor was approximately 1800 cal. per kg. of material at 52% solids. In one mill 50 tons of coal (at 7000 cal. per kg.) and 70 tons of waste liquor (52% total solids) were needed to supply the mill's steam requirements of 25 tons of steam per hour. In this mill where approximately 50% of the waste liquor, after removal of fermentable sugars for yeast, was evaporated and burned, roughly 30% of the mill's steam requirements were supplied from the heat value of the waste liquor. This mill had a daily production capacity of 35 tons of purified beech pulp. In another mill where 90% of the waste liquor was evaporated and burned without the removal of the fermentable sugars, 60% of the total steam requirements of the mill were supplied by the heat value in the waste liquor. However, steam produced from burning the waste liquor was 20% over that required to concentrate the waste liquor. This plant had a daily productive capacity of 75 tons of bleached beech pulp. At this latter plant the total cost of the pulp mill and waste liquor recovery plant was 12 million marks; the evaporators, furnaces, and auxiliary equipment accounted for one-quarter of this. The manager estimated that the burden of the waste liquor recovery added 2.6 marks per 100 kg. to the cost of the pulp.

Ramen Evaporation and Burning System. This is a process developed in Sweden. Its only application on the Continent was at Lenzinger Zellstoff A.G., Lenzing, Austria. In this process, briefly, the waste liquor was heated and concentrated in a primary evaporator heated indirectly by waste heat from a gas scrubber and operated under a vacuum. The partly concentrated liquor (20% total solids) was then sprayed into the flue gas (250°C.) from a cyclone and evaporated to 30% total solids, being separated from the flue gas in the scrubber. This concentrated liquor was then sprayed into hot gas (900°C.) from the furnace and the dried material separated from the flue gas by a cyclone. The dried material was finally blown into the furnace and burned at 1200°C. The evaporator (ceramic lined) was operated at 70°C. and 700 mm. vacuum. The operation of this particular plant was not considered satisfactory because of difficulties encountered like foaming, liming in the heat exchangers, plugging of spray tubes before the cyclone, prefiring in the cyclones, and explosions in the furnace (from dust or powder). The plant cost 3 million marks to build. Its hourly capacity corresponded to 7.6 metric tons of powdered waste liquor. Sufficient heat for conducting the evaporation was generated only when the total solids of the entering waste liquor exceeded 12%. (For mills utilizing fermentable sugars 10% is generally the maximum). Extra fuel was needed for total solids below 12%. It was understood that Ramen has designed a pre-evaporating scheme whereby the liquor is to come to the regular plant at 25% total solids. No details of this pre-evaporation scheme were obtained, although it was reported to have been tried in the Swedish mill, Werk Hornsfors.

Concentrated and Dried Byproducts. The utilization of values in the sulphite waste liquor other than the fermentable sugars and the heat appeared to be somewhat limited both as to kind and quantity. A small quantity (amount not known) was used in linoleum cement, insecticides, fire-fighting compounds, and possibly other adhesive applications. A plant for production of vanillin had been projected, but not built.

The production of "Hansa Extracte," the Waldhof tanning compound, involved treatment of the residual liquor with sulphuric acid and precipitation of the calcium sulphate. The resultant liquor was then treated with ammonium hydroxide evaporated to 45° Bé conventionally in evaporators with stainless steel (V4A) tubes, and finally air dried. The waste liquor from the pulping of spruce and not beech was used. For the core binder and linoleum cement the residual from the alcohol or yeast plant, either spruce or beech was considered satisfactory, and was evaporated directly to various concentrations of solids depending on the use intended (20 to 38° Bé in one mill) and dried to a powder where desired. Although the sugar content of the waste liquor was reduced from 3 or 4% to 0.7%, the concentrated liquor was reported to have good adhesive values.

Kraft Pulping and Bleaching

Although Germany's kraft pulp production was less than 100,000 tons per year, kraft pulping represented a new and important part of the German pulp industry. Since all the mills (except one small mill in Austria) were in the Russian occupied zone, none was visited. Technicians from several of the mills, however, were interviewed and certain details on manufacturing procedure were obtained.

At the Phrix mills (Kuestrin and Hirschberg)—(both built in 1938, each with a daily capacity of 60 tons) pine wood came to the mills with bark removed

by hand in the forests. No provision had been made at the mills for removing bark; attempts to pulp wood without removing bark were unsuccessful. The wood was reduced to chips 25 to 35 mm. in length with 6-knife chippers. The chips were transported by an air conveyor. At Hirschberg there were two digesters of 220 cubic meter capacity and at Kuestrin there were 4 of 125 cubic meter capacity. Circulation was used at both mills. The cooking liquor had a concentration of 110 to 120 grams per liter of sodium hydroxide and 20 to 25 grams per liter of sodium sulphide for bleachable pulp and 100 to 110 grams per liter and 18 to 20 grams per liter, respectively, for paper making pulp. The time cycle included 0.75 hours for charging the chips (steam charger at Hirschberg), 20 minutes for liquor charging, a cooking cycle of 3 to 3.25 hours and 0.75 hours for discharging. The same cooking schedule was used for paper making and bleachable grades except for 15 minutes more at the maximum temperature of 172°C. for the latter. The cooking time schedule was as follows: start at 60 to 70°C.; 100°C. at 15 minutes; 145°C. at 30 minutes; 160°C. at 45 minutes; 165°C. at 60 minutes; 170°C. at 75 minutes; 172°C. at 90 minutes; hold at 172°C. for 45 to 60 minutes and gas down for 45 minutes. The chemical consumption at the start of operation was 3.5 to 4 kg. of caustic soda per 100 kg. wood. As furnace losses were reduced, the chemical consumption was reduced to 2.5 to 3 kg. The bleachable pulp had a viscosity of 40 to 45 centipoises and the paper making pulp a viscosity of 90 to 95 centipoises (Aschaffenburger test).

The bleachable kraft pulp made as just indicated had a total chlorine requirement of 4 to 5% and was bleached in a 3-stage system. The first stage was a chlorination in a Hollander type bleacher. The chlorine water had a concentration of 30 grams per liter and the bleaching was conducted for 2 hours at a consistency of 4%, the chlorine consumption on the pulp was 3%. The viscosity at the end of the first stage was 30 to 35 centipoises (40 to 45 centipoises at start). The pulp was washed with acid and then went to two towers for an alkaline extraction stage. Sodium hydroxide at a concentration of 20 to 30 grams per liter was added in the amount of 2 to 3% on the pulp. The viscosity of the pulp at the end of this stage was 20 to 25 centipoises. The third stage was a sodium hypochlorite bleach in a Hollander. After 10 hours hypochlorite bleaching the pulp viscosity dropped to 14 centipoises. After 2 to 4 hours more (for complete removal of lignin) the viscosity dropped to 10 to 11 centipoises. The pH value at this time was 7 to 7.5. Apparently the pulp was given a final acid wash for 2 hours at a pH value of 6.5 using hydrochlorie acid for acidifying.

The Waldhof kraft mill at Johannesmuehle had a total annual pulp production of 35,000 metric tons. This was divided into 18,000 tons unbleached, 1,000 tons bleached for paper, 6,000 bleached prehydrolyzed pulp, and 10,000 tons bleached refined pulp. The pulp was produced in 9 digesters each with 70 cubic meters capacity and yielding 5.5 tons of pulp. Chip packers and circulation were used. The cooking ("white") liquor concentration was equivalent to 100 grams per liter of sodium oxide with 25 to 30% sulphidity. The proportions of black liquor used depended on the product. A 6-hour cooking cycle was used for papermaking pulp and an 8-hour cycle with a maximum temperature of 163 to 164°C. for bleachable pulp. The Sieber numbers were: papermaking pulp, 85; bleachable pulp, 55. The chlorine requirement of the bleachable pulp was 8%. The yield of papermaking pulp was 45%.

The bleachable pulps (including the prehydrolzed grade) were bleached according to the Thorne system using chlorination, acid wash, neutral hypochlorite, wash, and alkaline hypochlorite. The conditions used for prehydrolysis and for refining are discussed in the section on "Purified Pulps."

The recovery of the alkali in sulphate pulping is an all important factor in the economy of the overall operation. A new development in filters was the Scheufelen filter. This filter had received very favorable publicity, but had not been tested in service. The principle of the filter involved the use of a rubber felt or belt pressed against a rotary wire covered cylinder. A big advantage was its ability to handle stock from 1.5 to 12% consistency. In the latter case the pulp produced was claimed to have a consistency of 36%. *(To be Continued)*

TAPPI Notes

The annual get-together of the TAPPI Kalamazoo Valley Section and the Michigan Division of the Superintendents Association will be held at 6:30 p.m., Thursday, January 16th at the Park American Hotel, Kalamazoo, Mich. Reuben B. Robertson, Jr., Executive Vice President of the Champion Paper & Fibre Company will talk on "The Human Side of Paper Making." Peter J. Massey, General Manager of the Bryant Paper Company, will be toastmaster.

The Hudson River Group of the TAPPI Empire State Section will meet at the Queensbury Hotel, Glens Falls, N. Y., at 6:30 p.m., Friday, January 17, 1947. E. C. Jahn of the New York State College of Forestry will be the speaker and will discuss some of his observations of Swedish mill practice.

Earl F. Anderton, formerly of the Scott Paper Company, is now in charge of quality control at the Fort Edward and Glens Falls mills of the Marinette Paper Company, Fort Edward, N. Y.

Wm. H. Palm, formerly of the Brompton Pulp & Paper Company, Ltd., is now with the Hinde & Dauch Paper Company of Canada, Ltd., Toronto 1, Ont.

Chicago TAPPI to Meet

The TAPPI Chicago Section will conduct a panel discussion stressing the importance of preparing paper surfaces for good printing. This meeting will be held at 6:30 p.m. January 20th at the Chicago Bar Association Rooms, 29 South LaSalle Street, Chicago, Ill. The speakers will be John F. Halladay, Industrial Process Consultant, Elkhart, Indiana, W. A. Kirkpatrick, Allied Paper Mills, Kalamazoo, Mich., and Fred Weymouth, I.P.I. Division, Interchemical Corporation, Chicago, Ill. The presentations will cover board preparation, coating, equipment, coatings and inks.

Early Copies Wanted

A subscriber who lacks only the first two series of papers presented in this section of the PAPER TRADE JOURNAL seeks to complete his files of this material. The articles in question were those published in 1917 and 1918. He would like to acquire them from anyone who may have them for sale, and asks that particulars be sent, with details as to dates and prices, through the editors of this paper.